

THE
LARYNGOSCOPE.

VOL. XV. ST. LOUIS, MO., APRIL, 1905. No. 4.

ORIGINAL COMMUNICATIONS.

(Original communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

**FOREIGN BODIES IN THE TRACHEA, BRONCHI AND
ESOPHAGUS.—THE AID OF ESOPHAGOSCOPY,
BRONCHOSCOPY, AND MAGNETISM IN
THEIR EXTRACTION.***

BY CHEVALIER JACKSON, M.D., PITTSBURG, PA.

FREQUENCY. No adequate statistics are available, but it is certain that the frequency is greater than the reports show. Many cases doubtless inspirate a foreign body unknown to the parents and the true cause of the fatal lung lesion is never suspected. In cases of doubt the fluoroscope is called into requisition and, as in case VIII shows nothing and the case is discharged with parents and physician happy in the thought that the foreign body was not inhaled. Later the patient is suddenly taken off with pneumonia or bronchitis attributed to the more usual causes. Foreign bodies are doubtless swallowed by children unknown to the parents, and the resulting gastritis attributed to the usual causes. Undoubtedly, as pointed out by Halstead, infants often cough up and swallow foreign bodies that have entered the trachea and bronchi without the fact ever being known.

DIAGNOSIS AND LOCALIZATION.

Before the days of the X-ray much skill was displayed in exploration. The tendency to-day is to ignore everything other than X-rays. We will do well, however, to get the aid of a skilled physical diagnostician.

Roentgen rays are of use in three ways: For diagnosis of the presence of the foreign body, to locate its exact position, to enable

* Read at the meeting of the Eastern Section of the American Laryng., Rhinolog. and Otolog. Soc. Philadelphia, February 4th, 1905.

the direction of instruments by observing the shadow of the instrument on the screen. There is practically no foreign that will not show opaque to rays if a plate be made, and exposure be of sufficient duration. If the patient cannot, or will not, hold still sufficiently long, anesthesia must be used. A fluoroscopic negative report is dangerously unreliable. The shadow of the heart or of the vertebra may render even a metallic body invisible to the eye, as in case V and VII. A negative should be made in each of two planes at right angles to each other; ordinarily one antero-posterior and the other lateral.

PROGNOSIS

In oesophageal cases depends largely on the nature of the foreign body. Rounded smooth bodies, if not too large, proportionate to the age of the patient, may be removed even through tightly wedged, without injury to the gullet. If smaller they pass on into the stomach, and remain there without injury for a long time, or may be passed without harm. If, however, the body be sharp or pointed, to remove it may produce fatal injury. For instance, in cases such as case IV, it is certainly better to risk gastrotomy than to rip the esophagus open.

The prognosis of oesophagotomized cases is good—far better than cases where the oesophagus is only lacerated in removal of pointed objects. This of course is largely a matter of location. Oesophagotomies are always necessarily high up.

In tracheal and bronchial cases with early removal, the prognosis is good. In tracheal cases the foreign body can always be removed by tracheotomy, if not by tracheoscopy. If not seen early, or if operative permission be refused, the prognosis is bad. In bronchial cases the chance of removal, if seen at once, is good. After twelve hours, when the body becomes buried in the swollen mucosa, the chances are less. If not removed, the patient has only a fair chance of escaping fatal abscess, bronchitis, broncho-pneumonia, and traumatic infective pneumonitis.

Undoubtedly cases are not infrequent where even sharp bodies become encysted, in other cases the body will slough loose from its bed in the swollen mucosa and be coughed out or into the trachea or larger bronchi.

In prognosis this loosening must be considered as risking laryngeal spasm, which is prognostically bad in the absence of skilled aid. With a physician at hand to stab the crico-thyroid membrane,

the prognosis is good, as an extension downward of the crico-thyro-laryngotomy wound will enable the removal of the foreign body.

TREATMENT.

The indications for treatment are simple. Locate and remove the foreign body at once. But numerous questions arise. Having located the foreign body by X-rays and determined its nature, the laryngologist is often confronted with the problem as to whether the patient will be safer by removal or by let alone methods. The decision will rest on the points indicated under prognosis. A rough or sharp foreign body in any location should be removed, provided probably fatal traumatism be not inflicted in removal. In a class of cases indicated by case IV where an open safety pin pointed upward and its removal would rip open the tissues, a reasonably safe method of removal must be devised, but removal by some method must be done at all hazards.

In the trachea or bronchi a foreign body of whatever nature must be removed at all hazards short of mediastinotomy or similar procedure. While many cases do become encysted or are coughed up, the risk of waiting for this is great, while the risk of exploration is practically nil. This last is a point the writer wishes particularly to emphasize. He has tracheotomized eighteen cases for foreign bodies, without a single fatality, or even a pneumonia, within three weeks, which might be fairly considered a reasonable limit of time for the development of symptoms of exploratory damage the tracheotomy wound having always healed within two weeks. Two of the eighteen cases died, both of pulmonary abscess, developed around the unremoved foreign body. One death was six weeks, the other at two months after the exploration, to which it could not for this reason be attributed. The deeper air passages, by cough and by ciliary action are maintained in a fairly aseptic condition. With gentleness and careful aseptic technique, exploration through the tracheal wound is quite safe.

Inversion of the patient is a time-honored procedure, but had better not be done unless preparations have been made for immediate tracheotomy. In the writer's opinion it should never be done until after a tracheotomy preliminarily done with aseptic precautions and time for hemostasis.

For all bodies within reach of the finger, nothing is more successful than the *trained touch* for finding. If we educate our finger-touch as much as the gynecologist, we would often find it useful.

Kirstein's autoscopy occasionally is useful in cases of foreign bodies in the larynx or introitus oesophagi superioris. Better still is an Escat epiglottis lifter as modified by Grant, held by a skilled assistant, patient being in Rosen's position, while the operator kneels at the head of the table with a miniature hand lamp between his eyes (not on his forehead).

Laryngoscopy. A universal error in the literature of laryngology is the statement that indirect (ordinary mirror) laryngoscopy is difficult in children and infants. No mention is made of the ease of laryngoscopy under chloroform anesthesia. Of course the ordinary head mirror is not convenient for this—it requires either a miniature forehead lamp or one of the now common self-illuminating laryngoscopes. If we examine the larynx and find it free from obstruction and we have cyanosis or dyspnoea, especially if in addition the temperature be normal, and we have a history of choking on a foreign body—under these conditions the writer would make a diagnosis of foreign body, though the X-ray examination were negative. For laryngoscopy under anesthesia a silk worm gut loop through the tongue will not cause the after soreness and irritation that a tongue forcep or hemostat will, and is a trivial procedure considered in contrast to the danger by less careful procedure, of pushing downward a pharyngeally or laryngeally lodged foreign body into less accessible and more dangerous regions.

OESOPHAGOSCOPY.

Anesthesia may be local in adults, as the cesophagus is not particularly sensitive, but the cocaine solution must not be less than 20 per cent, and the laryngo-pharynx will need it particularly. The patient should be in Rosen's position, with the head very slightly to one side and the tube coming out the opposite side of the mouth. Killian and others have used the erect posture in some of their cases, the patient sitting on a low stool, but this requires the operator to stand, and is needlessly tiresome; and besides is less advantageous in the aspiration of secretions and manipulation of instruments, and the patient is not so easily steadied and controlled.

Technic. The tube, obturator in place, is warmed and oiled with sterile vaseline, passed back into the pharynx, using the index finger as a guide. The finger in the lead closes down the epiglottis and the tube passes over it, entering the introitus oesophagi. As soon as the tube has passed below the cricoid the obturator is removed and the tube passed by sight.

There is one important point in the technique of cesophagoscopy, and that is, not to interfere with an ample glottic respiratory aperture, especially if too large a tube be used. In using the smaller tubes in which there is no hope of applying the forceps under ocular inspection, the length of the tube should be marked upon the forceps by a rubber band, as suggested by Ingalls, so that when the forceps is inserted (with the opening in the proper direction) the depth of insertion can be seen by the rubber band arriving at the proximal end of the tube. Beyond this point the forceps must be inserted the distance required to seize the foreign body if the body is beyond the distal end of the tube. If within the distal orifice, insertion can be gauged accordingly. The writer feels certain of the utility of the permanent rod magnets instead of forceps in case of a magnetic foreign body.

Tracheoscopy and bronchoscopy by mouth may be done under cocaine if the patient be stolid. In sensitive men, and in women and children, deep, relaxing, general anesthesia will always be required, and thus must usually be supplemented with cocaine locally. The cocainization is easily accomplished in the trachea and right bronchus with a brush or cotton swab, but the left bronchus can usually only be cocainized after the tube has been passed down to the bronchial entrance. If attempted with local anesthesia, the preliminary hypodermatic injection of morphine will lessen excitability, probably as much by the stimulative increase of fortitude as by analgesia. Atropin may well be given with the morphin as not only synergistic but as an inhibitor of secretion. Atropin as suggested by Ingalls has a value in checking secretion.

The best time if selection be possible is in the morning before breakfast; otherwise, as long after meals as possible.

The bronchoscopes should be warmed and oiled with sterile vaseline. The obturator, if used, must be removed by an assistant the instant the end of the tube has passed the epiglottis. To the writer, as with Ingalls, the intubation habit is so strong that passing the tube with the index finger of the left hand as a guide as with an O'Dwyer tube, is easier. Killian, however, passes the tube under direct inspection, looking through it and using Kirstein's spatula. This precludes the use of an obturator.

The aspirator and swabs of cotton are used frequently to clear the tube of secretions.

Position of the patient. The writer has never used these or any other bronchoscope under local anesthesia, so that he has never

tried bronchoscopy with the patient in the erect position. He can, however, see no advantage in it to justify the risks of general anesthesia in the erect position. Chloroform anesthesia, with the patient in the recumbent position, the head hanging over the end of the table in Rosen's position, offers so many advantages that he does not feel inclined to try any other. The "sword swallowing" position of the head and neck is ideal. The head of the patient in the firm grasp of an assistant, is turned slightly to one side and the bronchoscope is allowed to pass out the opposite corner of the

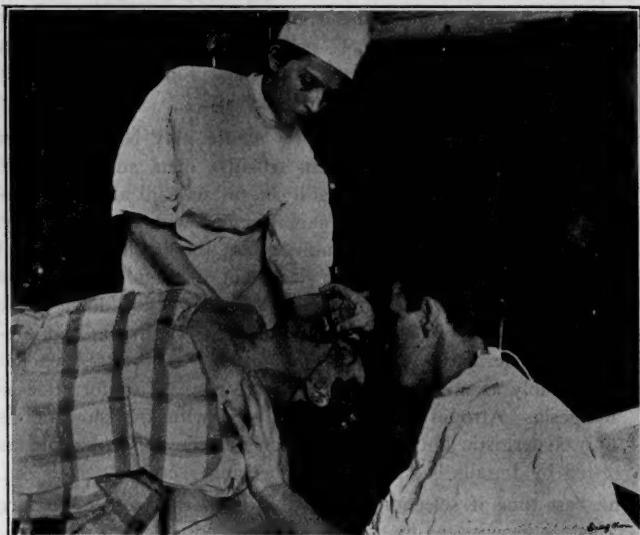


Fig. A.

mouth. Care must be exercised that adequate respiration is going on.

As Ingalls points out, it may be going so quietly as to lead to the inference that it is suspended. In view of this it is necessary to have the undivided attention of one competent man to watch the respiration, and nothing else. The pulse must be in charge of another. The operator should have one primary assistant and a second to turn on and off electric currents and similar unsterile duties.

Tracheoscopy and bronchoscopy by tracheotomy wound is easier of accomplishment, affords a good chance of aseptic manipulations,

if done at the same operation as the tracheotomy, and is, in the writer's opinion, safer, because it can be aseptic. Later, if the wound has become infected, it offers no greater hope of escaping septic pneumonia than the oral route.

Penetration of secondary and even tertiary bronchi have been reported. Certainly there is no difficulty in entering both the right and the left bronchis in the smallest children, while in adults the secondary bronchi are explorabile. Tertiary bronchi of infants present greater difficulties, by reason of their small size, demanding such a small tube that it is with difficulty kept free enough of

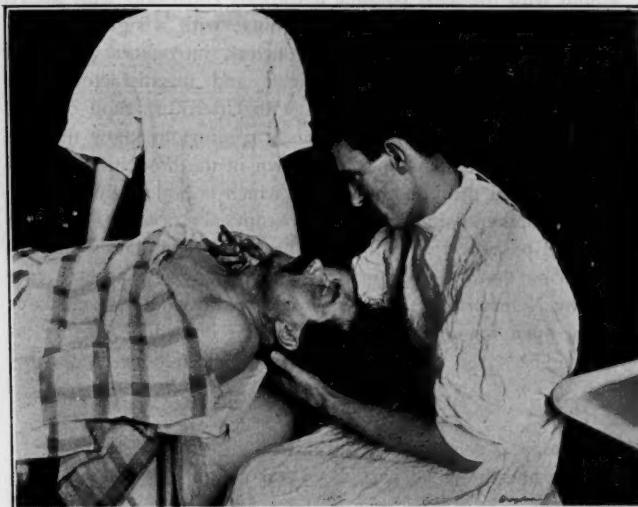


Fig. B.

secretion to afford a useful view. If secretion be not excessive, there is no great difficulty to those accustomed to ordinary otoscopy. True the tube is longer but with these improved instruments the light is right at the distal end, nothing is illuminated but the tissues in advance of the instrument.

As between tracheoscopy or bronchoscopy per vias naturales and per vulnerem trachealis, the writer prefers the later for several reasons. If in the trachea the foreign body is quickly and harmlessly removable without the danger of septic pneumonia, for the operator can be aseptic which the method by mouth cannot. Again, deep anesthesia is necessary by mouth, and of course it must be

chloroform. Profound chloroform narcosis, never a safe condition, especially if long continued, becomes less so by the introduction of a fresh element of danger in the abolition of the cough reflex. For this reason the writer prefers tracheotomy under partial chloroform anesthesia, as a first procedure, followed by careful probing with the patient in the inverted position to obtain the assistance of gravity. If the foreign body be magnetizable the magnet is passed, the patient being still inverted. All this time the assistance of the cough reflex is assured by partial anesthesia. Failing in these procedures, the writer advises bronchoscopy through the wound with the least possible anesthesia consistent with safety. Of course, violent straining and coughing, with a rigid bronchoscope in a secondary or tertiary bronchus, introduces a risk of traumatism and is vastly more difficult and unsatisfactory than when this reflex is totally abolished with chloroform and cocaine. When this abolition is necessary, it is a comfort to know that the distal end of the bronchoscope deep down in the bronchi is clean—not having passed through the mouth, which is hopelessly septic.

There is another danger in bronchoscopy per orem. Prolonged pressure and possibly traumatism of the glottic boundaries may result in œdema that will require tracheotomy anyway, as in a case reported by Nehrkorn. And in such a case the wound would have to be kept open for several days, instead of immediate closure, as would have been the case had tracheotomy been done in the beginning.

TRACHEOTOMY.

Tracheotomy is a safe procedure if:

- (a) The anesthesia be partial so that cough may help to keep passages clear.
- (b) The patient be kept in the Trendelenberg position during the operation and after.
- (c) If it be done aseptically and intra tracheal exploration be gentle.
- (d) If the plan of dressing here recommended be followed.
- (e) If a canula be not inserted without necessity.
- (f) If ethyl chloride and ether be not used.

Do not leave in a tracheal canula because there seems to be slight dyspnoea after the removal of a foreign body from the larynx and trachea. Put an aseptic dressing on the tracheotomy wound without stitching and station a nurse accustomed to tracheotomy cases, ready to dilate the tracheal wound should cyanosis appear. Generally it will not be needed.

Emphysema and sepsis both will usually be prevented by packing the wound with gauze tightly wrung out with 1:5000 bichloride solution, renewed every three hours.

External cervical oesophagotomy is justifiable in case of a foreign body, the safe removal of which is impossible per oreum.

Transthoracic oesophagotomy, gastrotomy and mediastinotomy belong to the sphere of the general surgeon.

INSTRUMENTS.

The *bronchoscopes* do not differ greatly from Killian's in form, on which indeed it seems impossible to improve. The illumination is, however, a vast improvement. In the larger sizes, the small

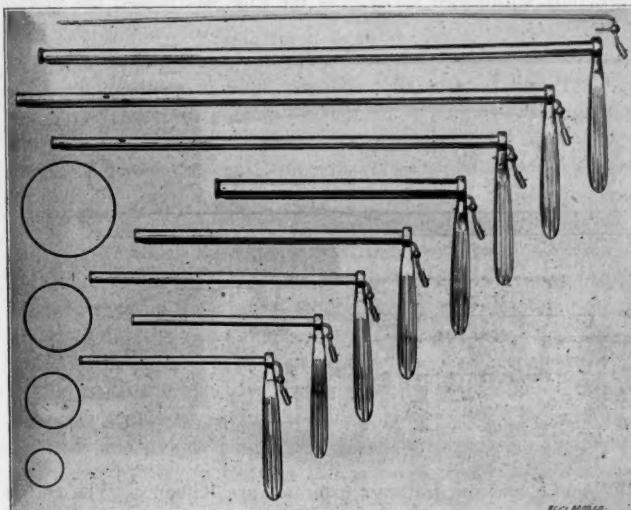


Fig. C.

lamps at the distal end of the tube are covered and protected and enable instrumental work under direct inspection, with lamps *in situ*. In the smaller sizes the calibre is insufficient, and the light carrier is inserted in the lumen of the tube and removed and re-inserted by an assistant as required, in the manner suggested by Fletcher-Ingalls. The perforations in the sides for admission of air from shut-off bronchi are also the suggestion of Dr. Ingalls. As warned against by Killian, if the bronchoscope should enter a large bronchus entirely occluded by a foreign body, the patient would get no air at all, unless lateral openings are provided.

The œsophagoscopes and bronchoscope are made with slightly bell-mouthinged extremities. The purpose of this is to facilitate the entrance of a foreign body, especially a point. If made like the ordinary urethroscope or Einhorn's œsophagoscope, there would be a strong tendency to override the point, or even the entire body, if like a needle. The œsophagoscope of Einhorn is for examination of the œsophageal lining and for this purpose its narrowed, coned extremity is well adapted. Obturators are fitted to all the instruments, though they should not be used for foreign body work ordinarily. If desired, they may be used to start the instruments, in the case of a foreign body definitely located in deeper structures. If used in tracheoscopes or bronchoscopes they must be, of course, immediately withdrawn as soon as the tube has passed the glottis.

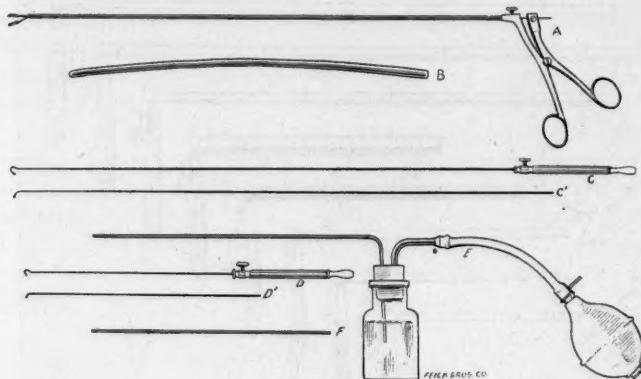


Fig. D.

The hooks, and the secretion aspirator are Killian's. The cotton carrier is an elongation of the common instrument with a threaded end that will insure against losing the cotton. The pump is the most satisfactory for the removal of abundant secretions, while swabbing brings everything out clearly to view. For forceps the writer uses Seiler's, Boecker's and von Schroetter's tube forceps of various lengths.

The *laryngo-pharyngeal speculum* is simply a short œsophagoscope, which, with the aid of an Escat's or Kirstein's epiglottis lifter, held by an assistant, the writer has found of greater convenience than Kristein's autoscope. With bodies located to one side of the laryngo-pharynx or introitus œsopagi superioris, the

speculum is inserted from the opposite side of the mouth, the angle of which is pulled backward to the extreme limit, while the head hangs over the edge of the table in the "sword swallowing" position. This is the position in which all tracheal and œsophageal instruments are inserted.

With all these self-illuminating instruments the ordinary street currents are unsafe for the patients. There is always a possibility of grounding, the one "live" side of the instrument through the patient, which though harmless through the skin, becomes dangerous if good contact with moist mucosa of deep passages should be made. Dry batteries are the best source of electricity for the purpose.

MAGNETIC EXTRACTION.

Dr. de Roaldes in 1900 suggested the use of the Haab giant ophthalmic electro-magnet in extraction of magnetic foreign bodies from the trachea and bronchi. Independently, the next year, Dr. Garel, of Lyons, reported the removal of a nail from the trachea, its probable location being less than three inches from the tracheotomy wound. Later, Dr. de Roaldes made experiments on the cadaver, by which he demonstrated that the limitation of magnetic extraction with the Haab magnet is about five inches below its point inserted in the tracheal wound—a point at which (in the adult at least) forceps extraction is easy. He tried extending this limitation with picture wire but failed and suggested vertebrated probes to be energized by contact with the point of the Haab magnet. He also demonstrated the slight utility of a miniature magnet an inch and a half long lowered into the trachea. A method is suggested by Dr. de Roaldes in which the Haab magnet is used to bring the foreign body up to the chink of the glottis through which it is drawn by a second smaller magnet introduced through the mouth, the Haab magnet being demagnetized when the second magnet is in contact. This ingenious suggestion has never been used by any one.

My own experiments have led to the development of four forms of magnets, which are herewith exhibited:

- (a) Permanent magnets long enough for insertion into the trachea and bronchi.
- (b) Electro magnets of small diameter but great length to be passed bodily into the air passages.

(c) A very powerful electro-magnet with a core extension. Fig. E.

(d) A ring magnet, technically a solenoid, into which the inverted patient is lowered bodily. Fig. F.

One great trouble with magnetic extraction is the necessarily small size of the foreign body. Practically the magnetic force you can apply is in inverse ratio to the size of the foreign body. In other words the magnet can exert no more attraction on the foreign body than the foreign body does on the magnet. If a railroad spike could be inhaled, it would be easy to design a magnet



Fig. E.

to pull it out, pull it through the patient, or lift him off his feet. Further in order to exert any attraction it must magnetize the foreign body, hence you must have either a small magnet closely approached to the foreign body, or otherwise a very large magnetic field.

One great advantage of magnetic extraction over forceps extraction is that the magnet will pull the free end of the foreign body, as a tack; while the point sticking into the tissues comes last, so no traumatism is inflicted.

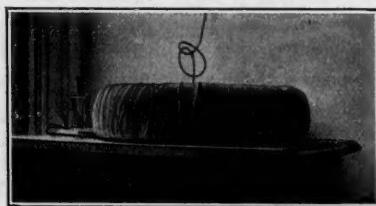


Fig. F.

Limitations. For a magnet to be of service, it must be remembered, that:

1. The body must be of iron or steel, partly or wholly.
2. The body must be free to move.
3. The attraction of the magnet for the former body is no greater than the body for the magnet, hence:
4. The probabilities of magnetic removal are inversely as the size of the foreign body, within the limits of size permitting mobility.

5. The magnetic force diminishes almost as the square of the distance, hence:

6. The location must be such that the core of the magnet can be brought within reasonable distance of the foreign body. Therefore:

7. The magnet is of undoubted utility for magnetic bodies located in the trachea.

8. Prolongation of the core lessens only to a small degree the loss as the square of the distance, but to a limited extent is valuable if it enables contact.

9. Beyond contact the effective distance between foreign body and the magnet increases directly, as the size of the foreign body.

10. Magnets of small diameter for insertion bodily into the air passages can be made of only very limited power because of the necessarily small area of core cross section.

11. By inversion of the patient, gravity may assist a weak magnetic action.

Magnetic extraction is not adapted to removal of bodies from the esophagus for the reason given under 2. The body is practically never free to move. The collapsing walls would wipe it off. So would the vocal cords if the attempt were made to remove magnetically a body located in the trachea. It could not be readily brought through the glottis. If however, the oesophagoscope or bronchoscope be used through which to pass the permanent rod magnets devised by the writer, this wiping off does not occur.

Even with foreign bodies reachable by forceps, magnets, especially the permanent or the solenoid forms, offer such an easy, quick and harmless means that they deserve first trial.

Projected Core Magnet. To secure the greatest possible magnetic projection with the drawback of so slender a core projected so far from the coil a large pole piece at the back is used, and the core and projections are solid. Of course the loss is great. If the core were cut off close to the coil the magnet would suspend about 100 pounds of iron, whereas the suspension at the end of the projected core is only a few ounces.

Permanent magnets. The advantage of the permanent magnet is its aseptability and its ease of manipulation. Its power is not great and it requires actual contact, but in a body like a tack, perfectly free to move, or at most hindered only by viscid secretions, it will certainly bring the body to the glottis or tracheal wound as the case may be. To invert the patient just about doubles

the pull by calling in the *aid* of gravity, while at the same time annihilating its *opposition*.

In using a permanent magnet, be careful to always use the same end. In these days nearly everything made from iron ore is steel—rarely iron, unless it be cast iron. With any of these except the softest wrought iron, contact of a magnet leaves a residual magnetism in the object. If then the permanent magnet be reversed, the object will be repelled instead of attracted.

The same thing will occur in using an electro-magnet if the polarity of the current be reversed. This is important in case of powerful electro-magnets, as commercial electric circuits are sometimes reversed. Small iron toys, "jack-stones" and the like, which we are so apt to meet with as foreign bodies in children, are cast iron or cast steel. These become magnetized from contact with a magnet, either permanent or electro, and if the polarity of the magnet be reversed, the attraction is lessened until the magnet and body have been sufficiently long in contact to reverse the polarity of the foreign body.

These permanent magnets are exceedingly convenient for use though the bronchoscopes, cesophagoscopes, etc., or they may be used alone. All parts of the tubes and lamps being of brass are in no way affected. A long body like a needle or tack found cross-wise the tube, will range itself so as to come out clinging to the magnet, if the latter be moved back and forth a few times. If grasped with forceps, body and tube would have to be withdrawn together ripping the walls.

A New Magnet. The writer has devised a solenoid magnet as shown in Fig F. It consists of an enormous coil of magnet wire, which when energized by a suitable current will throw any iron or steel body to its center and suspend it there. If the body be approached to one or the other side of the ring, in the plane of the ring, it will rush to that side. When such a body is approached to the magnet it is pulled directly to its central axis and drawn in, just as a floating block of wood is drawn into the vortex of a whirlpool. When the center of the magnet is reached the axial traction is at a minimum (satisfied, so to speak) and lateral traction is at its maximum.

The patient is suspended inverted over the center, and lowered head first into the coil until the plane of the foreign body (as marked on the skin at a previous X-ray examination) corresponds to the plane of the upper edge of the coil. The patient is then

drawn upward while the foreign body, if of iron or steel, and free, will tend to stand still, while the patient is lifted clear of it. When the foreign body reaches the level of the tracheotomy wound, the wound is approached closely to the side of the magnet, when lateral traction will be exerted by the magnet. From experiments it would seem that as soon as the inverted patient is lowered into the magnet to the level of the tracheotomy wound (no lower) a magnetic foreign body, if in the trachea and free to move, should jump to the tracheal wound, and then out when the wound is approached to one side of the magnet. Or, if preferred, the body can be lifted out of the wound with brass forceps. (Steel instruments of any kind must not be used near the magnet). If preferred, extraction may be attempted without a previous tracheotomy, but the probability of spasmotic glottic closure must be borne in mind, and preparations for a stabbing tracheotomy should be made. The solenoid has no action on a sphere. A steel ball such as used in bicycle bearings is uninfluenced by it. Such a body would have to be removed by the following method: After the surgeon has become sufficiently familiar with the lines of force of the magnet, an iron probe can be passed down into the air passages, and it will become so strongly magnetized as to enable removal of any body it comes in contact with. This method, however, is not available, nor even safe, until the surgeon is so well acquainted with the lines of force of the solenoid as to prevent the jerking of the iron probe out of his hands and injuring either himself or the patient. The patient and the probe must be placed in proper position before the current is turned on. This is the most powerful way in which to use the magnet, but it requires an accurate knowledge of the force lines, while the previous method is easy, perfectly safe, and sufficiently powerful for all bodies not spheres.

In cases of elongated bodies such as tacks, nails, needles, etc., they are fortunately laid straight in the axes of the magnet, which in use corresponds to the axis of the tracheal lumen. Were they turned crosswise the magnet would be useless.

The power of this solenoid magnet is sufficient to remove any susceptible foreign body that is free to move. Of course it may not be capable of tearing out a body fixed by being buried in the swollen mucosa. Such a body can only be removed in the event of its later sloughing or ulcerating loose and being coughed up into the trachea or larger bronchi.

The power of this magnet used on small bodies, is not so enormous that we can afford to ignore the aid of coughing and of

gravity. With the latter especially, we must reckon. By inverting the patient we get double the force of gravity. Erect, we have it so many milligrams against us, according to its weight; while by inversion of the patient we have it twice that number of milligrams in favor of the magnet.

Case I. Double-pointed pin in the introitis oesophagi superioris. Failure of Oesophagoscopy. Removal by aid of touch. Mr. M. brought to Dr. Ewing W. Day by Dr. J. Clinton Atwell, of Butler, Pa., with a history of lodgment of a duck bone in the throat while eating a piece of breast of duck two weeks previously. Laryngoscopy showed a fungous granulation on the right glosso-epiglottic fold which was edematous, but there were no signs of a foreign body. Dr. Atwell had seen a needle-like foreign body with his own fluoroscope. Dr. Day sent the patient to Dr. Russell H. Boggs and had two skiagraphs made, one lateral, one antero-posterior.

Kirstein's autoscopy and laryngo-pharyngoscopy by both Dr. Day and myself failed to locate any foreign body, though the granulation before mentioned could be seen. Dr. Day nipped this off with forceps, but no foreign body was hidden in or beneath it. Touch was, however, successful in locating the object under the mucosa in the wall of the oesophageal entrance, whence it was torn out by forceps. It proved to be, not a duck bone, but a double pointed stick pin. How it became imbedded in the duck's breast is unknown. Failure of the laryngo-pharyngeal speculum here was due to the fact that the sharply pointed pin had traveled from its point of entrance marked by the granulation, to a new location where it was covered with normal mucosa. Nothing but touch could reveal its presence.

Case II. Pin in the oesophagus. Urethroscope serving as oesophagoscope. J. P. sent to me by Dr. W. C. Meanor was admitted to the Western Pennsylvania Hospital, where the pin complained of was located by X-ray examination by Dr. Meanor and Dr. Ralph Duffy. It was sticking point downward high up in the oesophagus. The writer tried removal with the finger as a guide to the forceps, but the finger was not long enough to reach. A self-illuminating urethroscope without obturator was inserted, and the pin appeared crosswise of the end of the tube, neither head or point in sight. No forceps being at hand sufficiently small to pass through the urethroscope, the latter was removed and an antero-posterior forcep of delicate construction introduced. The

body located by sense of touch transmitted through the forceps and fortunately grasped and removed. An esophagoscope of ample size would have made removal per tubam easy, as the pin even though only catchable by the middle could have been pulled into the tube, doubling it up in the process.

Case III. Double pointed tack in the oesophagus removed with the aid of the oesophagoscope. John B. a stolid youth of 18 years came to my office stating that Dr. — naming a well known surgeon had opened his windpipe in search of a wire staple (double pointed tack) that he had "choked on" while at his work as electric wire-



Fig. G.

man. He had "coughed and choked and spluttered" but could not get it out. He had had a slight cough previously but this became worse and there was considerable expectoration, at times bloody. Both of these had ceased a few days after the operation. He insisted that he felt the tack in his throat every time he swallowed, and indicated with his finger a point just above the clavicle. The mother stated that the surgeon had "nearly turned the child inside out with a brush" (bristle probang) and not finding anything had operated on his neck. The boy had a recently neatly healed tracheotomy cicatrix. The writer passed a short esophagoscope with local anesthesia. Shortly after the distal end of the tube had

entered the oesophagus the loop end of the staple came into view with stems of the tack upward and to the left. By means of the large and serviceable handle the tube was manipulated to the left and slightly withdrawn until the insertion of both points of the tack in the oesophageal wall was located. Then a hook similar to the one exhibited was inserted and the loop of the tack caught, and drawn into the tube through which it was withdrawn. It proved to be the double pointed tack or staple exhibited and would have done serious, probably fatal, damage to the oesophagus had it been forcibly withdrawn with forceps without an oesophagoscope. The probang if it had been successful (and if the tack were there at the time) would have withdrawn it harmlessly, for it would have come loop first if at all. However, the writer feels confident from the history of urgent respiratory symptoms in the beginning of the case that the tack was originally in the bronchi beyond reach of the surgeon, and that later it had been coughed up and swallowed. The writer succeeded in convincing the patient and his mother of the correctness of this view. This double pointed tack points a double moral. Do not rely upon the bristle probang's negative result; and do not fail to warn the patient that, though in the bronchi at the time, it may be coughed up and swallowed, and later be discovered in the alimentary canal.

Case IV. Open Safety pin in the Oesophagus located by oesophagoscope, removed by gastroscopy. Infant L., male; 9 months of age; breast fed, good previous health, though slightly pale. On Dec. 24th at 5 p. m. was lying on a bed, the mother changing the diaper, when it was thought to have picked up and swallowed an open safety pin.

On Dec. 26th at 2 p. m. the writer was called to the Western Pennsylvania Hospital by Dr. George R. Winter and Dr. John D. Milligan to see the infant. With the assistance of Dr. Ralph Duffy, a fluoroscopic examination had already been made and the pin had been located at the level of the thyroid cartilage, point upward. By digital examination two hours previously Dr. John D. Milligan had been able to touch the "keeper" end in the oesophageal entrance barely within reach of the finger. Preparations were immediately made and the child anesthetized by Dr. Reineman, when the pin was found to have disappeared beyond sight or reach. An oesophagoscope was passed by the writer, and the pin discovered deep down in the oesophagus, evidently quite near the cardiac orifice. The point could not be seen, though from the visible portion it was

clear that the point was directed upward and to the left, pointing directly toward the heart. The writer endeavored to draw the point into the œsophagoscope, but on account of the small caliber (adapted to a 9-month infant) this proved impossible. In a larger size it would have been easy. Had this been accomplished the pin could have been easily and harmlessly withdrawn.

The œsophagoscope was withdrawn and Tiemans foreign body forceps inserted with which the pin was readily clasped, presum-

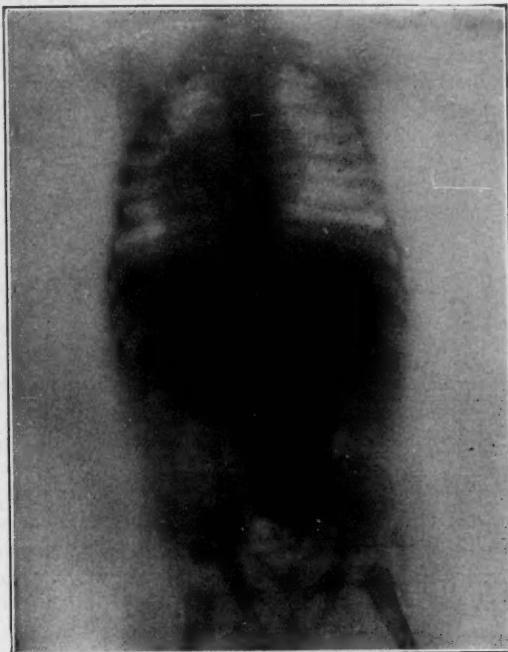


Fig. H.

ably by the spring end. (This presumption later was shown to be correct by the marks of the forceps corrugations on the pin.) The click of the Tieman forceps clasping the pin could be plainly heard, and could be felt through the chest wall by Dr. John Milligan. Traction however demonstrated that the point was sticking in the œsophageal wall. As it was pointing, presumably, directly toward the heart (judging from the œsophagoscopy and as afterward demonstrated by radiography) it was clear that safe withdrawal was

impossible not only on account of its size but because the only part of the pin that could be seized was the flattened spring end, which would prevent rotation when in the grip of the forcep. The temptation to draw it out was great, after searching for a foreign body to find it, and feel it in the forceps grasp. Yet a slight pull on the forceps gave a peculiar sensation which can best be described by a comparison with the sensation of pulling on the line close up, when a fish has swallowed the hook. The sensation was peculiarly convincing that violent removal would have resulted in fatal traumatism to the cesophagus, pericardium, heart or other thoracic viscera.

In consultation with Dr. John Milligan and Dr. George Winter it was decided that gastrotomy would be the safer procedure. On Dec. 27th, the child was taken to Dr. Russell H. Boggs to have a



Fig. I.

radiograph made and a half tone of this is shown in Fig. H. Allowing for the angle, the pin was about opposite the body of the tenth dorsal vertebra, in the position demonstrated by the cesophagoscope.

At noon Dr. John D. Milligan assisted by Dr. Brown, Dr. George R. Winter and Dr. Zimmerman with Dr. Reineman as anesthetist, skillfully and rapidly gastrotomized the child. The stomach was empty but was carefully flushed out. The pin was not found in the stomach nor as far up the cesophagus as Dr. Milligan's finger would reach. The writer then passed a Tieman's forceps down the cesophagus, the jaws being partially opened as the location of the pin was reached. When the pin was felt the jaws were spread and the pin seized and pushed down to where Dr. Milligan's skillful fingers with the aid of a hook-bent probe engaged and removed it. The pin is shown actual size in Fig. I.

The secretions in the cesophagus gave no trouble in cesophagoscopy, as is often the case. The writer worked from the head of the patient, with a separate table, instruments and nurse, so as to in no way risk any accident to the aseptic technique of Drs. Milligan and Brown.

A more devilish contrivance than an open safety pin could scarcely be devised, and all parents should be warned against the common habit of allowing infants and children to play with them. In addition to preventing safe withdrawal the spring, while favoring the seriatim action of the swallowing muscles, assists the point in acting as the pawl of a ratchet.

Case V. Carpet tack in left bronchus. Attempted removal by forceps and magnet passed through tracheal wound. Edward J.,

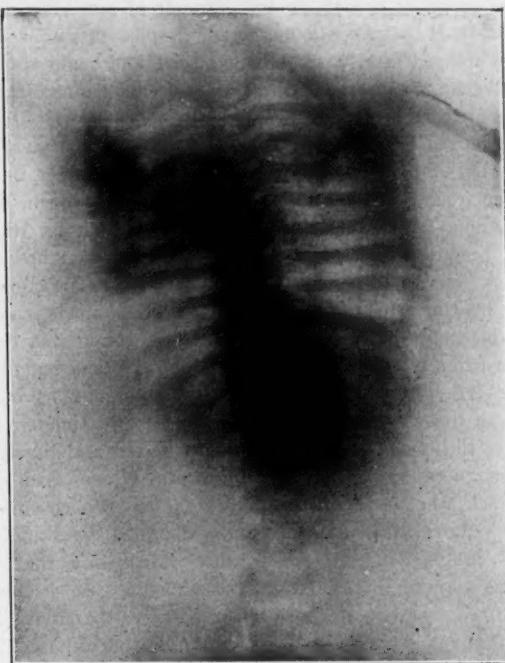


Fig. J.

3 years of age, healthy and well nourished, was brought to me by Dr. Eastman of Brownsville. Two days before the child had been noticed to put a tack in its mouth. The mother saw the tack far back in the mouth and attempted to get it out, but failed because the child naturally jerked away, and at the same instant aspirated the tack. There followed some cough and dyspnoea, but these had subsided at the time the child was brought to the writer. Dr.

Eastman examined the chest and reported a probable atelectasis over the middle portion of the left lung. The writer examined the larynx and found it free from a foreign body or any sign of traumatism. The child was admitted to the Western Pennsylvania Hospital, the tack was seen with the fluoroscope to be located opposite the 5th intercostal space. Allowing for the angle, and considering its axis we believed it to be in one of the left secondary bronchi. It was lying head downwards, the point probably sticking in the bronchial wall preventing expulsion while the head corked up the bronchus preventing the entrance of air. The child was sent to Dr. R. H. Boggs, who made radiograph reproduced in Fig. J. The child jumped after a second's exposure and could not be controlled save by an anesthetic which was deemed unnecessary, as a faint though certain shadow was found on the plate. The child was anesthetized by Dr. Reineman, and with the assistance of Dr. Eastmen, Dr. Zimmerman, Dr. Miller and Dr. Wagner the writer opened the trachea and explored the trachea and bronchi in every direction, not omitting the side opposite from that on which the tack had been located, lest it should have been coughed up and fallen back into the other bronchus. During this procedure the child was held inverted, and was allowed to come almost completely out, and hiccup vigorously. The tracheal wound was then tied open with letter U sutures tied back of the neck, and put to bed in Trendelenberg posture. Next day the tack not having been coughed out the writer with the assistance of Dr. Zimmerman and Dr. Boyce, the child being partially anesthetized and inverted, attempted magnetic extraction without avail. It was then decided that the tack was too deeply imbedded in the swollen mucosa to permit of removal until it should have sloughed loose and should have been coughed up into the trachea. Meanwhile the tracheal wound was allowed to close. Dr. Day saw the case at this stage and concurred. Dr. Swope was consulted as to the advisability of a mediastinotomy or other external operation, but advised against it unless an abscess or some such definite focus could be localized. The child had practically no reaction, played and talked, and, except at change of dressings, seemed as well as usual which demonstrates the harmlessness of bronchial exploration by way of an aseptic tracheal wound. A rare feature found in this case is the presence of a foreign body in the left bronchus.

Case VI. Buckshot in trachea. Removed by inversion of patient. Laryngeal spasm. Crico-thyro-laryngotomy. A girl 4 years of age was brought by her father to the dispensary of the Eye, Ear and

Throat Hospital with a history of having choked 3 days before while playing with several shot in her mouth. Three had been subsequently found in the stools, but parent feared some others might be "sticking somewhere." Coarse rales with absence of respiratory murmur and percussive resonance over the lower left lobe. The writer prepared for tracheotomy, then had the father hold the child up by the heels, when deep cyanosis immediately set in. The writer felt certain that the cyanosis was due to the presence of the foreign body at the glottis, and that reversion of patient to the upright position was unwise, lest the foreign body drop back into the bronchi. Not succeeding in clearing the glottis with the finger, and breathing having nearly ceased, the crico-thyroid membrane was stabbed, air entered, spasm ceased, and a buckshot dropped through the mouth onto the floor.

Case VII. Coffee berry in the trachea. Removed by tracheotomy. Infant N. Brought to the writer by Dr. McConnell of Gallitzin. Four days previously she had choked while playing with an older child who said she had "swallowed" a roasted coffee berry. There had been occasional dyspnoea and cyanosis since; physical examination by Dr. McConnell and Dr. D. Jackson revealed large moist rales audible all over both sides of the chest. Air was present everywhere in the lungs. The breath was very fetid, but without coffee odor. Temperature 101, pulse 120, respirations 30. Fluoroscopic examination both in Altoona and in Pittsburg had been negative, and both radiographists had most positively assured the parents that there was no foreign body in the chest.

Both tracheoscopy and tracheotomy having been prepared for, the child was anesthetized skillfully by Dr. Eyman, the tongue drawn out with a silk-worm gut loop when the writer on laryngoscopic examination found the larynx free from foreign body or any lesion. Pus was seen to well up from the trachea. When the writer saw the vocal cords spread widely at each inspiration, yet considered the intermittent dyspnoea and cyanosis he strongly urged tracheotomy. This was at first refused and had it not been for the firm backing by Dr. MacConnell and Dr. D. Jackson the operation never would have been done and the child would have died.

With the kind assistance and advice of Dr. MacFarlane the writer opened the trachea, held back the tracheal lips with silk-worm gut, and allowed the child to come partially out. A probe passed down into the trachea brought on a paroxysm of coughing during which the foreign body was coughed up to the level of the tracheal wound

where it was quickly seized and removed by the writer before it could be re-inhaled. It was followed by a gush of exceedingly foul pus, which if it had not been liberated must have resulted in death, septic symptoms already being present.

The skin incision healed per primam, but an emphysema with a large sac of air under the skin at the site of the incision required re-incision. Prompt healing followed and the child went home well in a week after admission.

The points of interest are the absence of coffee odor, the nearly fatal result of reliance upon a negative fluoroscopic examination (a coffee berry would have shown on a plate); the correctness of a diagnosis based on intermittent dyspnoea with a free larynx, in the face of opposition by the X-ray men, and the inadvisability of immediate suture of the entire tracheotomy wound. It would have been better to have left in a wick of gauze to drain off the air leaking out of the trachea that caused emphysema.

Case VIII. Bay leaf in trachea. Removal through Killian's tracheoscope. Mr. P. aged 30 was brought to my office from a neighboring restaurant where he had "choked" while eating soup. He could breathe for a few minutes quite normally, then coughing would be followed by deep cyanosis with gasping inspiratory efforts. The largest and shortest Killian tracheoscope was introduced through the glottis, when the edge of a thin object presented at the orifice of the tube. It was readily caught with a Seiler forcep and withdrawn. It was found to be the portion of a leaf herewith exhibited. The presumption is that it is a bay leaf used in flavoring soup.

Case IX. Shoe button in bronchi for 2 years. Removed from trachea with Killian's tracheoscope. Rosina K., aged 18, had a history of choking on a shoe button about 2 years before. Removal at the time by inversion had been tried, but the incident had almost been forgotten as it never seemed to affect the health. A few days prior to bringing her to the writer there had been cough with choking efforts to expectorate, blueness of the face. The patient claimed to feel the button come up and fall back after each unsuccessful effort, which brought away blood streaked, purulent, expectoration. After thorough cocainization the writer had just introduced the distal end of a Killian tracheoscope past the vocal cords, when the button, propelled by cough, shot into and part way up the tube which was then quickly removed with the button in its lumen. As

you will see, the button is covered with incrustations. No Roentgen ray examination was made.

BIBLIOGRAPHY.

- Pieniazek: *D. Verengerungen d. Luftwege*, 1901.
 Von Schroetter: *Wien. Klin. Woch.*, 1900, No. 51.
 V. Hacker: *Beitrag. z. Klin. Chir.*, 1900, vol. xxxix.
 V. Hacker: *Langenb. Arch.*, 1901, vol. lxiv.
 V. Mikulicz: *Tech. und. Klin. d. Esophagoskopie*, 1901.
 Rosenheim: *Berlin. Klin. Woch.*, 1896.
 Killian, G.: *Deutsch. Med. Woch.*, 1900, No. 51.
 Killian, G.: *Journ. Laryng., Rhin. and Otol.*; London, 1902, p. 461.
 Halstead, T. H.: *Proc. Am. Lar., Rhin. and Otol. Soc.*, 1902.
 Nehrkorn: *Deutsch. Med. Woch.*, vol. xxx, No. 40, 1904.
 Roaldes: Note Sur l'Emploi de l'Eletro-Aimant pour l'Extraction de Corps Etranger.; *Revue Hebdom. de Laryng., d'Otol. et de Rhin.*; Jan. 4, 1902, p. 1.
Annales des Mal. d l'Oreille, du Lar., etc., Feb., 1901.
 Kellock: Foreign body in left Bronchus; *Lancet*; Nov. 15, 1902.
 McIntyre: Electro Magnet, etc., *Journ. Laryng., Rhin. and Otol.*; London, Dec., 1902.
 Peters: Foreign body in the Oesophagus; *Canadian Pract.*; Feb., 1902.
 Cheval: Foreign body in Oesophagus. *Proceedings Belgian Soc. Otol., Rhin., et Laryng.*, 1902.
 Coolidge: *N. Y. Med. Journ.*; 1899.
 Killian, J. A.: *Vers. Suddeutsch. Laryng.*; Heidelberg, 1902.
 Killian, J. A.: *Deutsch. Med. Woch.*; 1901, No. 52.
 Hajek: *Wien. Med. Woch.*; 1902, No. 17.
 Wied: *Verhandl. d. viii. Vers. Suddeutsch. Laryng.*; Heidelberg, 1901, May 5.

**Suppurative Diseases of the Middle Ear—SAMUEL IGLAUER—
 The Cincinnati Lancet-Clinic, April, 1904.**

The author believes that early incision of the drum membrane is indicated under the following conditions: 1. Severe, continuous aural pain or tenderness over mastoid. 2. High fever. 3. Extreme restlessness, especially in children. 4. Persistent vomiting. 5. Upon the first symptoms of meningeal irritation or of stupor. 6. Marked swelling or bulging of the drum. 7. If the drum is thick from previous inflammations. 8. If the spontaneous perforation is too small. 9. If the ear becomes involved in the course of scarlet fever or measles (usually.) 10. If in doubt make an incision.

STEIN.

ABSCESS OF THE TONGUE, WITH REPORT OF TWO CASES.*

BY FREDERIC C. COBB, M. D., BOSTON.

Abscess of the tongue cannot be considered a common disease. In fifteen years of experience I can recall but two cases, one in the Hospital and one in private practice. The explanation of the rarity of this disease is to be found probably in the very rich blood supply of the tongue, and perhaps also in certain resistance to infection which it acquires on account of its constant exposure to all sorts of microorganisms. It is well known that all injuries to the tongue heal quickly and the traumatic ulcerations due to bad teeth cicatrize within a wonderfully short period after the cause of the trouble has been removed.

Butlin divides acute glossitis into several varieties, taking as a basis the predominant organisms found in each form,—streptococcal, staphylococcal, hemorrhagic and mercurial. The variety to which abscess of the tongue belongs is the staphylococcal, and is distinguished from the streptococcal by the concentration of the swelling in one portion of the tongue rather than by a general affection of that organ characteristic of streptococci. In the streptococcal form infections of the cellular tissue to the neck, Ludwig's angina, or infections in various neighboring organs by extension, as the pericardium, glottis or lungs, are liable to follow. Inflammation may start elsewhere and infect the tongue secondarily, as in the case cited by Butlin, where a puerperal fever was followed by a streptococcal glossitis. In the abscess form in which the staphylococci predominate, a hard swelling forms at some point in the tongue, which is always more or less swollen, and after a variable time the abscess bursts, or is lanced, and pus is evacuated, after which all the symptoms promptly subside.

The history of the two cases is as follows:

J. E. C.—male—age 41. Gave a history of pain on swallowing four weeks previous which greatly increased up to the present. He had been treated by several physicians for sore throat without success. There was no marked salivation and no odor to the breath. Examination of the throat was negative, but the base of the tongue showed a swelling the size of a small marble, but

* Read at the meeting of the Eastern Section of the American Laryng., Rhinolog. and Otolog. Soc., Philadelphia, February 4, 1905.

deep within the tissues of the tongue. No fluctuation could be obtained. A few days later the abscess bursts from the base of the tongue at a point nearly opposite the insertion of the posterior pillar, and much foul pus was evacuated. The patient made a rapid and uninterrupted recovery.

Case II. J. P.—25 years of age. Entered the Massachusetts General Hospital December 5, 1904 with a swelling of the tongue in the posterior third. Temperature 99.6. The duration was four days and the symptoms salivation and great pain on swallowing, with impeded motion of the tongue, the tip of which only was free. He was given iodide in considerable doses, but there being no improvement and the swelling becoming more sharply localized, the tongue was lanced deeply and a cavity containing considerable pus was found. Convalescence was rapid and in three days the signs of swelling of the tongue had almost disappeared.

The diagnosis in these cases was not difficult, as soon as localization occurred. In the first case the disease had progressed so far that the general swelling had gone down and the local condition had become evident; while in the second case it was necessary to wait a few days to determine where incision should be made.

The literature of abscess of the tongue is fairly rich. As a rule the outcome is favorable, but fatal cases have been noted. One especially may be cited, where an anaesthetic was given, but so great was the swelling that the patient died of suffocation before incision could be made.

Tuberculosis of the Soft Palate—LEO KATZ—*Monatschr. f. Ohrenh.*, Berlin, April, 1904.

The author reports two cases in which the tuberculosis of the soft palate was associated with pulmonary and laryngeal tuberculosis. In the first case the general condition was bad and tubercular nodules appeared on the soft palate shortly before the death of the patient. In the second case the general condition was good, but a perforation of the soft palate appeared, surrounded by tubercular nodules. The perforation became converted into a notch through the destruction of the intervening tissue. The case was treated with the galvano-cautery, snare, lactic acid, etc., and healing took place.

YANKAUER.

REPORT OF A CASE OF KERATOSIS OF THE THROAT.

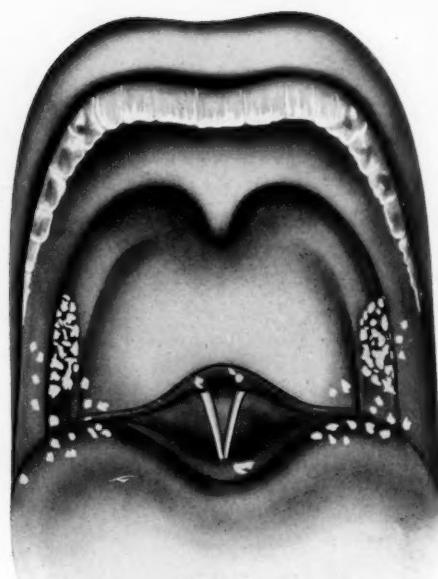
BY HAL FOSTER, A.B., M.D., KANSAS CITY, MO.

On Jan. 7, 1903, Mrs. L. consulted the writer concerning her throat. I had known her for several years, she was a highly educated lady and spent her time largely in writing for society papers. She was born in Canada, but had lived nearly all her life in the United States, and considered herself strictly American. She was 40 years old, married, was the mother of a son and daughter, both now grown. She read and studied and lead somewhat a sedentary life. She informed me that she had been afflicted with constipation and hay fever for years, otherwise her history was excellent.

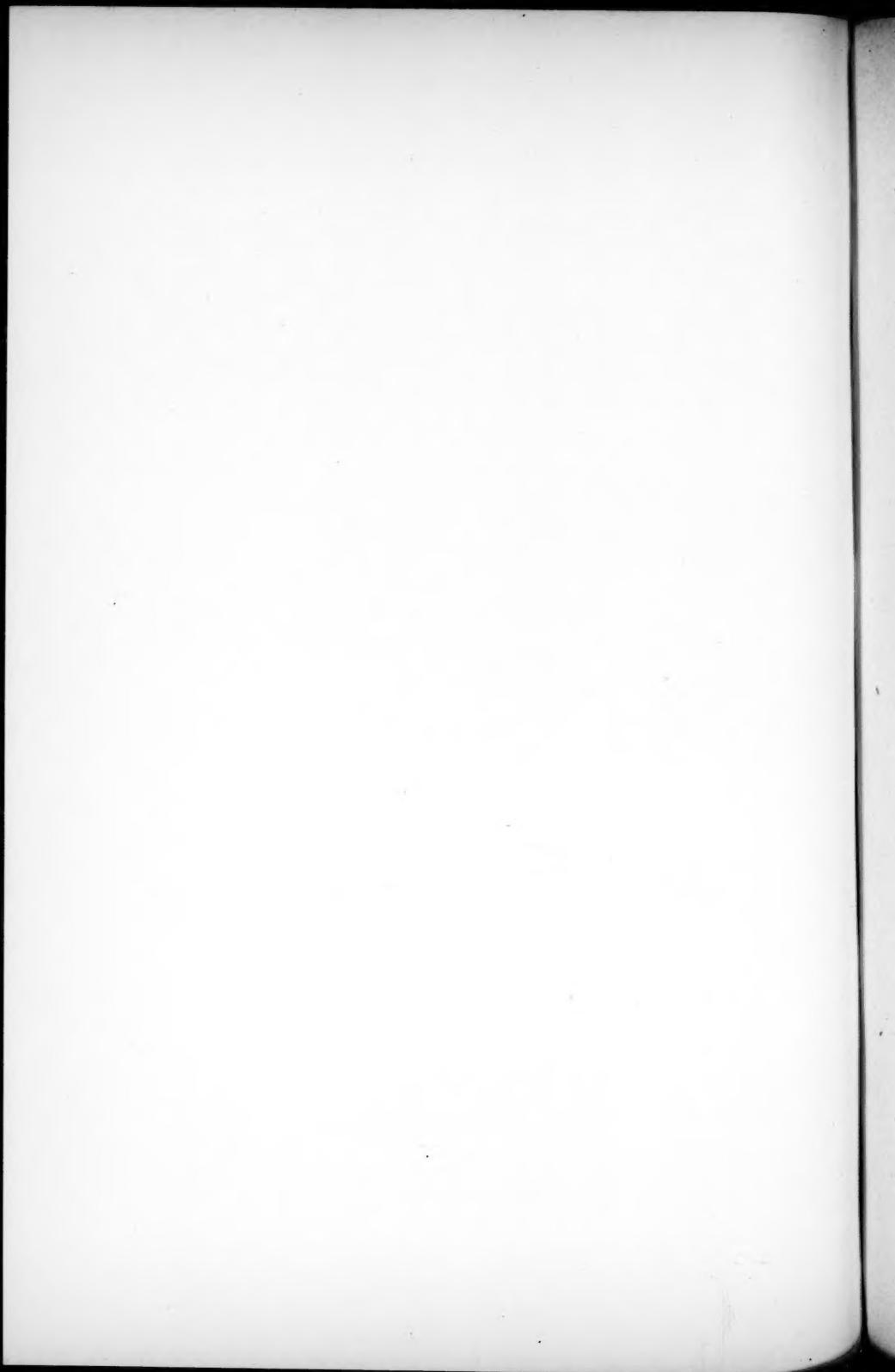
About six months before consulting the writer, she complained of a bad taste in the mouth, sweetish in nature, a constant tickling sensation in the throat, at the back of the tongue, which induced cough. A physician was consulted, he told her that she had a chronic tonsilitis and prescribed for her. His treatment she continued until I saw her. (It was pyrozone as a gargle.) This treatment failed to allay the irritation, or afford any relief in any way. She had examined her own throat, seeing the white spots on tonsils, she decided to consult me on Jan. 7, 1903. When she presented herself, she was nervous and had worried a great deal about herself, and was unable to sleep. She had never had any pain or any other bad symptom, aside from the tickling, in fact, she would not have known the disease existed, had she not seen the white spots on the tonsils and fauces.

The examination of the nose, revealed a chronic rhinitis, hypertrophic in character. There was quite a mucous discharge in the naso-pharynx, which caused much clearing of the throat. She complained of a constant sweetish taste in the mouth, which was very annoying.

Her sleep at night was interfered with, chiefly from worry, as she was of a nervous temperament. She was troubled with a sensation of a foreign body and a scraping in the throat. The accompanying cut was drawn from this patient's throat and illustrates its appearance, when I examined it. Large white spots of different sizes were seen over the tonsils and both pillars of her fauces and on the epiglottis. They were also noted on the base of the tongue



TO ILLUSTRATE PAPER OF DR. HAL FOSTER



and back wall of the pharynx. Her teeth were in excellent condition. Aside from mild anemia, her general health was good.

The treatments she had been receiving failed to benefit her, which consisted mainly of gargles and strong solutions of silver nitrate locally. The white spots were seen in masses, projecting far enough from the tissues to be easily removed by forceps. Their removal would be followed by a slight bleeding. Immediately I applied a mild solution of chromic acid. A permanganate of potash solution was given to the patient to use as a gargle, every three hours. She consulted me daily for about two months. I would once a week, apply formalin, after removing, by means of forceps. Lysol in full strength seemed to do more good than anything else I could use, except the actual cautery. The galvano-cautery seems to be by far the best agent in my hands to remove this disease. It should only be applied after cocainizing the parts to be cauterized. In this case I applied it three times a week, it was never necessary to apply it very deep, by this method, I avoided the pain and discomfort which is apt to follow.

The lady was able to attend to her literary work and her throat has given her no trouble.

In 1896, I reported a case of pharyngo-mycosis leptothrica, in the Kansas City Medical Index, in a young adult. Since that time, I have seen a great many cases of pharyngeal mycosis in young people.

As a rule these cases are diagnosed as follicular tonsilitis. I am satisfied that they are much more common than formerly supposed.

In my experience, the cases of Keratosis, occur in middle life and are much more rare.

Dr. Theodor Heryng, seems to be the first to write of the pathology, he claimed that the keratosis was of the epithelium of the tonsil.

Dr. G. B. Wood, Medical Bulletin of Philadelphia, Jan., 1902, writes on the subject.

Dr. J. C. Beck of Chicago, Annals of Rhinology, reports several interesting cases.

Dr. Siebenmann of Basel, 1904, writes very extensively of keratosis and to him the profession are obligated for the true pathology. Dr. E. F. Ingals reported a case in Chicago, Review, 1896.

Dr. Lober, International Centralbl. Laryngology, page 179, vol. vi.

Dr. Brown Kelly, Glasgow Medical Journal, 1895.

Dr. Coulter, Chicago Recorder, 1900, also reports cases.

In my case the white spots were firmly adherent.

Some writers tell us that tobacco cures this disease, I doubt such a statement because I have treated smokers with the disease. We are not justified in telling patients that they do not need to be treated. It has been my experience that these patients are always worried, while it is true that as a rule no harm is done by the disease. By the use of antiseptics and the cautery, these white spots can be entirely removed.

Like many other diseases it will require some time and a very careful attention to detail to cure them.

Dr. Kyle in his recent book, has thrown some light on this subject.

Five Cases of Foreign Bodies in the Respiratory Passages—

FRANZ NOWOTNY—*Monatschr. f. Ohrenh.*, Berlin, Aug., 1904.

1. A boy, 5 years old, had inhaled a bean. On the following day tracheotomy was done, and a pair of forceps introduced into the trachea, by means of which the bean was removed from the right bronchus. The exuberant granulations which formed in the trachea at the site of the wound were removed by means of a tracheal canula, introduced through the larynx.

2. A child $2\frac{1}{2}$ years old, inhaled a pebble, 2cm. long. On the following day a tracheoscope was introduced through the larynx and the stone was seen in the entrance of the right bronchus. It was seized with a pair of forceps and removed together with the tracheoscope.

3. A girl, $5\frac{1}{2}$ years old, had swallowed a fish bone. Dyspnea ensued and became so marked that a few days later tracheotomy and laryngofissure had to be performed. The fish-bone, $2\frac{1}{2}$ cm long, was found imbedded in the larynx.

4. A boy, $3\frac{1}{2}$ years old, had inhaled a piece of bone 2cm long, which could be seen beneath the glottis. It was removed by tracheotomy and laryngofissure.

All of these cases recovered.

5. A girl, 16 years old, had inhaled a prune pit. It could be seen in the radioscope, in the sixth intercostal space. As there was no marked reaction the patient refused operative interference.

YANKAUER.

OSTEO-MYELITIS OF THE TEMPORAL BONE.

BY CHARLES W. RICHARDSON, M.D., WASHINGTON, D. C.

Having during the past few years written several papers upon the subject of Acute Osteo-Myelitis of the Temporal Bone, I propose in this paper, only to report a case, which has all the evidences of such an infection, except that the temperature course was not of that degree of intensity as was usually observed in the other cases which I have seen. The case also presented other unusual and interesting features, which will be brought out in the history.

On November 5, I operated on a young girl fourteen years of age for adenoids, enormously hypertrophied tonsils, and a marked deflection of the septum into the left nasal cavity. She progressed favorably until the fourth day, when she developed an acute inflammation of the left middle ear, which subsided in the course of ten days. Two weeks after the onset of the acute inflammation there developed tenderness over the mastoid antrum, with severe neuralgic pain over the anterior temporal region. The membrana tympani at this time had assumed a normal appearance. Active treatment instituted for several days to combat the mastoid seemed to be resultful, until the third day after the onset, when there was a rise of temperature— 101° —attended with some slight oedema over the mastoid. Mastoid pain greater and more extensive. The next day a report of no improvement was made from patient, and she was ordered to hospital for operation. On seeing her the following day, the day of the operation, I was somewhat astonished at the extent of the infiltration over the mastoid and the temporal region. This infiltration extended over an area fully an inch and a half from any point of the edge of the auricle. Anteriorally it extended to the margin of the orbit, being sharply limited below by the margin of the zygoma. The patient was heavy and sluggish, uncomplaining unless disturbed. The skin was sallow and the tongue heavily coated. The pulse 120 soft and compressible; temperature 101° .

The infiltration gave a peculiar expression to the face. The infiltrated area was somewhat firm, not pitting as deeply as the infiltration usually encountered as secondary to mastoid involvement. The incision was made through a colloid like tissue fully an inch in thickness before the bone of the mastoid was reached. The

external surface of bone appeared perfectly normal. On chiseling through the cortex, the diploic structure of the bone was found to present that peculiar vascular appearance and friable nature seen in cases of osteo-myelitis in the early stages. No pus was encountered until just before entering the antrum, when about ten or fifteen drops of thin watery pus flowed out. When the mastoid antrum was opened it was found to be filled with granulative tissue. The granulative tissue in the antrum was found to extend forward into the aditus, as well as into the zygomatic cells. Not the slightest evidence of pus was found after the antrum was opened. After all the granulations were thoroughly removed, the case was dressed as usual. The somnolent condition was very marked for the first three days after the operation. Daily afterwards the patient's condition improved, although it was ten days after the operation before the infiltration had fully disappeared from the anterior temporal region. The recovery was uneventful.

The interesting features in this case were the occurrence of mastoidal inflammation after a non-perforative inflammation of the middle ear; the rapidly occurring and extensive oedema of the soft tissue; the presence of such extensive granulation in the antrum and zygomatic cells; and the presence of all manifestation of osteo-myelitis without the typical temperature curve.

Primary Osteitis and Caries of the Mastoid—HEINRICH HALASZ—
Monatschr. f. Ohrenh., Berlin, Aug., 1904.

The patient, female, 55 years old, was suddenly taken with pain in the ear. On the following day there were deafness and vertigo, and a swelling appeared behind the ear. This was incised and pus was evacuated, but a fistula remained for about three months. The mastoid was then opened, and pus and carious bone removed. The caries had extended to the lateral sinus, and the sinus was wounded during the operation. At no time was there any otorrhoea, no perforation of the drum existed and no evidence of the previous existence of middle ear disease could be found. YANKAUER.

AURAL NEURALGIA OF DENTAL ORIGIN.*

BY GEORGE L. RICHARDS, M.D., FALL RIVER, MASS.

While aural neuralgia of dental origin is a well-known phenomenon and referred to in most text-books on diseases of the ear, at the same time the literature on the subject is meager and but little can be found. I do not at this moment recall having heard the subject discussed before this Society. I am quite sure that cases of severe aural pain, having its origin in some trouble with the teeth, are not infrequently seen by all of us. In order to bring the subject to your attention, with the hope of gaining something from the discussion, I present the following remarks.

Such patients present themselves with a history of severe earache lasting a longer or shorter time, pretty severe in character, entirely uninfluenced by the various measures which they have used for its relief or which their physician has used for its relief. The pain is of a rather constant type and does not suggest the throbbing, continually intensifying pain of an acute otitis media. On examination of the drum there is no sign of inflammatory action. The history of a cold, some form of exposure, possibly of a carious tooth, may be given after close questioning, but as a rule the patient does not refer the condition to the tooth.

Anatomically there is a connection between the inferior dental nerve which supplies the teeth of the lower jaw, and the otic ganglion. The otic ganglion is situated immediately below the foramen oval, and it is in close relation to the structures of the middle ear, the tensor tympani muscle, the Eustachian tube, the auriculotemporal nerve, and has a direct connection with the internal pterygoid of the inferior maxillary nerve. I have not been able to find any direct connection with the nerve supply of the upper teeth which come from the posterior, middle and anterior-superior dental branches of the submaxillary nerve, unless it be by way of the gasserian ganglion. As, however, this entire nerve net-work has many connections, it is quite possible that the irritation of the nerves of the roots of the upper teeth may also be referred back to the ear, although in my own experience most of the cases of aural neuralgia have been connected with affections of the teeth of the lower jaw rather than the upper. Exactly why pain in con-

* Read before the Eastern Section of the American Laryng. and Rhinol. Society, Philadelphia, February 4, 1905.

nnection with the teeth should be referred back to the ear rather than any other of the points with which the dental nerves may be connected or be in relation, I cannot say. The following cases will illustrate the relationship between the teeth and the ear.

Case I. A woman who had suffered from severe neuralgia of the face and ear for many years, but without much if any relief, was finally referred to me by her family physician. Examination of the ear showed no trouble whatever. She was then referred to a dentist who extracted an upper jaw molar tooth on the root of which a wisdom tooth was growing cross-wise, and pressing on the dental nerve, somewhat similar in appearance and in results to those illustrated by Dr. Cryer in figures 118, 119, 120 and 121 in his text-book on "The Internal Anatomy of the Face." The removal of the tooth cured the pain in the ear.

Case II. A Jewish woman about 35 years of age, complained of severe neuralgic pain in the right ear. Examination of the ear showed no inflammatory action whatever, and after seeing her for a couple of times I was very sure in my mind that the cause of the pain was not in the ear. I referred her to a dentist who removed a lower molar, very much out of shape, and pressing directly on the inferior dental nerve. With the removal of this tooth all symptoms referable to the ear, immediately disappeared.

Case III. Woman of about the same age came complaining of severe, somewhat intermittent, neuralgic pain in the ear. Examination showed no inflammatory action visible in connection with the drum, and she was referred to a dentist who removed the last two upper molars on the right side, finding the root of the next to the last molar to have a little abscess cavity at its tip. The ear pain instantly stopped and has never returned.

Case IV. Young woman about 30, intermittent earache in the left ear several days' duration, relieved by hot applications and the hot water bottle. Examination of the drum showed no apparent trouble with the ear. The canine and the incisor next to it on the lower jaw, left side, have troubled her more or less, and hot things applied at this point will cause neuralgic twinges in the ear. This case was referred back to the dentist as being probably dental in origin, and after treatment of the teeth the pain in the ear disappeared.

Case V is somewhat different and is the only one of its class that I have seen. A boy of about 12 years of age had, as the result of a cold, an acute inflammation of the middle ear, accompanied with very severe pain. Free incision of the tympanic membrane was

done but no relief whatever followed, and the severe pain continued for a number of days, requiring morphia hypodermically for its relief. On giving him something in the way of a cold drink on the second or third day of the aural pain, an unusually severe paroxysm of pain in the ear followed. Noticing this I thought of the possibility of there being some trouble with the teeth which caused the severe pain, or at least intensified it. So the dentist was sent for, who found that the filling had come out of one of the lower teeth on the left side, and that there was also a delayed eruption of one of the bicuspids. He was very doubtful whether either one or the two together was sufficient to explain the intense pain, but after free incision of the gum over the expected bicuspid and the putting in of a temporary filling in the tooth, the pain entirely disappeared, and for the first time in three days, the boy ate something apparently with relish. The severe pain did not return although the inflammatory ear symptoms as such continued and the case later showed inflammation of the mastoid, for which a mastoid operation was done.

While no part of this paper, I may mention in connection with this case, that when the mastoid operation was done, only the two terminal cells at the tip were found involved; all the rest of the mastoid area being apparently perfectly normal. This also was somewhat unusual in my experience, as usually if the tip cells are involved, some of the intervening ones will be also.

When severe pain, for which there are no objective appearances to be found in the tympanic membrane or in the throat, appears, and the usual measures for palliative relief do little or no good, I think it always advisable to have the teeth carefully examined, with the probability that a good many of these cases of aural neuralgia will be found to be of dental origin.

As aurists I think we ought to have perhaps more knowledge in regard to the teeth than we have and more ability to locate in the teeth those pains for which we cannot or do not find sufficient cause in the ear.

NASO-FIBROMA TREATED BY INJECTIONS OF MONO-CHLORACETIC ACID.*

BY HARMON SMITH, M. D., NEW YORK.
Assistant Surgeon Manhattan Eye, Ear and Throat Hospital.

William T., age 16, came under my observation on May 2d, 1904, in Dr. Chappell's clinic, at the Manhattan Eye and Ear Hospital. No family nor constitutional history obtained bearing upon the condition present.

The patient had one year previously consulted an ear specialist for deafness, tinnitus and pain in the right ear. This gentleman referred him to the nose and throat department where adenoids were removed, and some minor operations were performed in the nose and naso-pharynx, the nature of which the patient is unacquainted with, and the operator fails to recall. The symptoms diminished after this treatment for some months when the same conditions again began slowly to manifest themselves, and with increasing intensity.

When examined by me there was almost entire occlusion of the right naris and marked obstruction of the left. The naso-pharynx was roomy, and a good view was obtained of all structures therein. The posterior end of the inferior turbinate on the left side was markedly hypertrophied. Occupying the entire right post nasal space was a fibrous tumor which projected over the orifice of the Eustachian tube on the right and beyond the septum into the left post nasal space and occupying about one-third of this. It was sessile in form and projected only a small distance downward toward the pharynx. It was smooth and oval in outline, and the numerous attempts to engage it in a snare or spoke-shave were unsuccessful. I also attempted to remove it with a Grable adenotome and various shaped curettes. None of these attempts resulted in more than severe haemorrhage. It is difficult to give the dimensions of a growth of this character or to accurately describe its obstructing qualities. However, I venture to say this tumor was the size of a pigeon's egg, though more oval in shape, and was attached to the septum, turbinals and the floor of the right posterior naris. I had a number of gentlemen see this tumor in the beginning, so that their observation might avail something in noting the ultimate reduction. On May 13th, I decided to try the method of injecting monochloracetic acid, and with Coffin's post nasal syringe

* Read before the February, 1905, meeting, Laryng. Section, New York Academy of Medicine.

injected three minimis of this acid into the tumor. Little reaction followed and no pain was experienced except that caused by the needle and the tension from the injected fluid. These injections were repeated at intervals varying from two weeks to two months according to the amount of slough occasioned by the acid. Perceptible diminution took place, and softening of the tumor was noted. This softening was a disadvantage in the administration of the acid, as the needle was too short to reach firm tissue, and upon its withdrawal acid would exude and run upon the posterior wall of the pharynx; this occasioned great discomfort. Upon one occasion a drop fell into the larynx and produced a laryngeal spasm which was relieved by free cocainization. Following this accident there was pain on swallowing of such intensity that the patient ate nothing for three days. About four months ago nothing remained of the tumor but a fibrous curtain covering the entire post-nasal space, and this was continuous except at one point, through which I passed a blunt pointed bistoury and detached it from the septum, the floor of the nares and the posterior end of the inferior turbinate. Into this flap I injected a few minimis of the acid, and it has disappeared. Likewise I injected the posterior end of the inferior turbinal of the left side, and it sloughed away. In all fourteen injections have been made varying from three to five minimis at each injection. The boy has gained fifteen pounds in weight; sleeps with mouth closed without snoring, has no post-nasal dripping, has improved in hearing, and is free from earache.

To obviate the disagreeable features of this injection I have taken the liberty of making in Dr. Coffin's syringe such corrections as seemed advisable. I have made the needle longer so that the acid could be injected deeper into the soft tissues. I have protected the needle by a jacket which conceals it until the point of injection is reached, when at the convenience of the operator the needle may be uncovered, and inserted into the tumor, when the injection is accomplished the jacket may be run into place before removing the needle from the naso-pharynx. This jacket serves the purpose first of preventing the needle engaging in the soft palate or any adjacent structures in the endeavor to reach the tumor, likewise this same protection is secured during its withdrawal; secondly the small cup-shaped tip will catch any excess of acid that may exude after the removal of the needle if left in place for a moment. The long stem of this needle screws into the piston making a very compact and not easily deranged instrument.

ADENO-CARCINOMA OF NOSE.—KILLIAN OPERATION FOR RADICAL REMOVAL.*

BY JOHN MCCOY, M. D., NEW YORK.

Assistant Surgeon Nose and Throat Department Vanderbilt Clinic; Assistant Surgeon Ear Department New York Eye and Ear Infirmary.

History. Mr. L., age 47 years, occupation printer.

Family history, negative as to cancer or tuberculosis.

Previous history, had pertussis as a child, otherwise has been healthy.

Present illness began about three and a half years ago when he noticed an obstruction to breathing through his right nostril; he then consulted a physician in Brooklyn his home city, and the physician within a period of six months, twice removed pieces of growth from his nose; in a short time however, the nostril was again occluded. When first seen by the writer, about three years ago, he complained that he could not breathe through his right nostril. On examination his right nostril was seen to be completely filled from vestibule to choana with a growth, which was dark greyish red in color, was fairly soft in consistency, and had an irregular surface; it bled easily but not profusely on detaching a piece, and on detaching the greater part of the mass with a forceps, its origin was ascertained to be the mucous membrane of the middle turbinate and the ethmoid cells. There was no enlargement of the cervical glands. A section of the growth was submitted to Dr. Jessup, Asst. Pathologist at the College of Physicians and Surgeons, and his report was that the growth was an Adenoma. The middle turbinate was now completely removed and the ethmoid cells curetted, with considerable hemorrhage during the operation. The patient was next seen about one year and a half later, when he again complained of occlusion of the right nostril, also of occasional attacks of dull pain over the right frontal sinus. On examination of the nose, the right nostril was again found to be occluded by the same character of growth, which was most dense in the region of the anterior ethmoid cells. On transillumination the frontal sinus was dark, the antrum however was translucent. A radical operation was then suggested but the patient would not hear of it that time. As much of the growth as could be seen in the nose was then curetted and the patient was not seen again for a year. At

* Read before the February, 1905, meeting, Laryng. Section, New York Academy of Medicine.

this time he said that the right nostril was occluded within six months after the last operation. On examination the right nostril was again seen to be filled with the growth, which was now softer and more vascular; it had extended forward and involved the mucous membrane reflected on the inner surface of the bridge of the nose, also the mucous membrane of the septum in that region. The frontal sinus was tender on pressure and he complained of continuous pain in that locality. A section of the growth was again submitted to Dr. Jessup, and a report was received from him that the growth was Adeno Carcinoma. The patient was advised of the cancerous nature of the growth and a radical operation urged, to which he finally consented on January 10th of this year.

Operation, January 10th, 1905.

Skin incision made, beginning at the outer margin of the right eyebrow and carried along the lower border of the eyebrow, (instead of through the eyebrow, as in the opinion of the writer, this incision gives a better symmetry to the eyebrows after operation) then curved down to the middle of the fronto-maxillary suture and curved downward and outward. The first periosteal incision was then made, beginning at the outer end of the skin incision but about 3-16 of an inch above it, carried through to the inner end of the eyebrow and curved downward to the root of the nose. The second periosteal incision was next made, in the line of the skin incision, starting just median to the pulley of the superior oblique muscle of the eye and carried down to the fronto-maxillary suture. The periosteum was then elevated and retracted from the frontal bone above the upper periosteal incision, and a gouge was used to make the opening into the frontal sinus. The entire anterior wall of the frontal sinus above the upper periosteal incision was then removed. It extended upward $\frac{3}{4}$ of an inch from the supra orbital ridge, and outward 1 and $\frac{1}{2}$ inches from the median line. The sinus, which was filled with a growth of the same character as that found in the nose, was then thoroughly curetted as well as the fronto-nasal duct. The posterior wall of the sinus was found to be deficient for a space about $\frac{1}{4}$ of an inch in circumference and the growth at this point was adherent to the dura. The floor of the sinus was next removed below the lower periosteal incision. Then the nasal process of the superior maxilla was chiselled away and an opening 3-8 by 5-16 of an inch effected into the nasal cavity at that point. The ethmoid cells were thoroughly curetted through this opening as were also the sphenoid cavity and the diseased tissue on the internal aspect of the bridge of the nose and the anterior portion of the septum nasi.

The entire cavity was flushed with hot saline solution, swabbed with pure alcohol and dusted with iodoform. The skin incision was sutured for primary union over the bony bridge left, and throughout its entire extent. Atropine was instilled into the eye and a light dressing of iodoform and plain sterile gauze applied.

The reasons for reporting this case are:

(1) Because of the comparative rarity of the condition. In an article in the *Berliner Klinische Wochenschrift*, February, 1903, Dr. Cordes thoroughly reviews the literature and cites the reports of seven cases, which are all that can be found in the literature up to that time. He also reports one of his own, making eight in all. Since then there has been but one case reported, that of Dr. Page before the American Laryngological Rhinological and Otological Society in 1903.

(2), Because of the method or removal of the tumor. In the reports of previous cases, where the growth was extensive, the radical operation advised was the complete removal of the superior maxillary bone and part of the ethmoid bone, thus leaving an unsightly deformity. Whereas in the method practised, the view of the field of operation is as good if not better than by the older method. The operation is certainly much less formidable and is productive of infinitely better cosmetic results. The result in this case, six weeks after operation, shows that the frontal sinus is obliterated, being filled with healthy granulation tissue. There is no sign of a recurrence in any part of the erstwhile diseased region, which now looks clean and healthy, and the cosmetic result is most gratifying, as it is not apparent to the casual observer that an operation has been performed.

139 W. 97th Street.

Paracentesis—K. BÜRKNER—*Arch. f. Ohrenh.*, Leipzig, Aug. 26, 1904.

The author investigated the question of paracentesis in acute otitis media with reference to the contention of Zaufal and Piffl, i. e., that the majority of cases recover without paracentesis. In order to be perfectly fair he carried out the method of treatment of Zaufal and Piffl in 44 private patients. The cases were carefully observed and tabulated, and compared with his previous statistics. The preponderance of complications and unfortunate sequelæ condemn the method, and emphasize the usual practice, early paracentesis.

YANKAUER.

REPORT OF A CASE OF MULTIPLE SINUSITIS CURED BY THE KILLIAN AND CALDWELL-LUC METHODS.*

BY HENRY B. HITZ, M.D., MILWAUKEE.

Mr. H., age 36, married—one child—occupation, lawyer. Consulted me in May, 1903, because of a copious discharge of purulent character, from which he had suffered more or less for many years.

His family and personal history were negative as to anything bearing upon his present condition.

For some years patient has been troubled with an eczema of the hands and an acne vulgaris of the face, and has also been subject to chronic constipation; appetite fair. From time to time, he has had acute frontal headache lasting several days. In 1887 suffered severely from an attack of inflammatory rheumatism.

He now complains of a copious purulent catarrh, morning headache of a dull heavy character, mostly in right frontal region, and more or less lassitude as the day advances.

Examination. Frontal sinuses prominent. Pronounced acne vulgaris of the face, and complexion "muddy." There were several capped dead molar teeth in the upper jaw. The nasal speculum revealed considerable pus in the inferior and middle meati. On the right side, a large pyramidal spur of the septum was observed jutting out below the middle turbinal opposite the ostium maxillare, and preventing a view of this opening and the upper half of the middle meatus. After thorough cleansing and wiping away of retained secretion, it immediately reappeared beneath the turbinals, opposite the antral openings of both sides. Careful examination failed to reveal any tendency to a reappearance of pus at the anterior ends of the middle turbinals. Posteriorly, pus was observed in the left middle meatus, but none on the right side. Observations were made for a few days, and transillumination was tried with negative results for both antra, and the right frontal sinus. The left frontal sinus was faintly outlined by the light reflex. During this period the left antrum was cleansed daily of considerable odorless pus, through the ostium maxillare; which was easily accessible. Owing to the septal spur on the right side the antrum could not be entered, in this manner, but a Krause trochar through the inferior

* Read before the Milwaukee Medical Society, December 11, 1904.

meatus discovered the presence of a copious foetid accumulation. Cleansing in this way was kept up for a week or more—when it was determined to remove the capped first molar tooth on the right side and a dead second bicuspид on the left. This was accomplished under nitrous oxide anesthesia, at two sittings, and silver tubes were inserted into the antrum through the alveolar openings. Both teeth removed showed exostoses at their roots, and the right a small abscess cavity.

Systematic cleansing was kept up by the patient during the summer, with considerable improvement in his comfort, but there remained a copious, though diminished discharge. Observations were made from time to time, and other possible sources of discharge looked into. Radical operation was suggested but his consent thereto was not received.

In September (1903) the anterior end of the right middle turbinal was removed for better inspection of the infundibulum, as the possibility of the antrum being the receiving reservoir of pus from the frontal sinus, was borne in mind.

The empyema of the left antrum seemed of a milder and more recent character, and appeared to be steadily improving under the systematic cleansing.

On about the 12th of October, shortly after a trip to New York, the patient presented himself with a greatly increased discharge. Some frontal headache, principally right sided, existed, and he complained of having taken a cold.

Under cocaine anesthesia search was made with a probe for the ostium frontale on the right side, and with little difficulty it was found (the wound following removal of the anterior end of the middle turbinal, having healed). A canula was then inserted into the ostium frontale and a small quantity of an alkaline solution injected. The immediate result was a feeling of fullness in the forehead, and then a sensation as of fluid flowing into the left sinus from the right, followed by a sudden discharge through the right ostium frontale of a thick, horribly foetid, muddy pus. Examination of the left side showed a small stream of pus also issuing from under the anterior end of the left middle turbinal, from which fact, with the subjective symptom mentioned, it was presumed that a communication existed between the two sinuses.

On this day (Tuesday) arrangements were made for a supraorbital opening on the following Sunday. Up to this time there had been no indication of fever. On the next day, headache being somewhat more severe, washing through the ostium frontale was

again resorted to; the discharge was as copious as and more foetid than previously, and appeared in both nostrils. Two hours after the patient left my office a telephone call announced that he had had a severe chill, and an hour later I found him suffering with intense headache and radiating pains over both sinuses; temperature 104°, pulse 120. Ice was applied, a large dose of oil administered, and arrangements were made for an operation early the following morning at the Knowlton Hospital.

On October 21, 1903, an Ogston-Luc operation was performed. The incision was carried through the unshaved right eyebrow from its center to the fronto-maxillary articulation at the inner end of the brow, the periostium pushed up, and an opening as large as a 25-cent piece made with a chisel, above the superciliary ridge. On penetrating the bone, pus of a very foetid character welled up in quantity sufficient to fill a wine glass, which, on being removed, exposed an enormous frontal cavity extending temporally to the limit of the superciliary ridge, and having a depth of 5 inches backward along the orbital plate. The cavity was lined with thick polypoid granulations, which were removed with a curette, and a careful exploration was made for the presence of pockets or bony trabeculae. The excessive bleeding was a source of considerable annoyance, but was easily controlled with hot wet packing. Search was made for the supposed opening into the adjoining sinus, and it was found at about the center of the partition, easily admitting a small probe, which on being withdrawn, was followed by an outflow of pus. An incision corresponding to that on the right, was then made in the left brow and a similar opening in the bone made. The condition of the left sinus was found to be identical with that of the right, although the cavity itself was smaller. It was similarly treated. At this juncture the patient, who had at no time taken kindly to the anesthesia, began to show signs of collapse, so that the operation had to be hastened. The nasal openings of the sinuses were then enlarged, gauze drains inserted, and the wound packed with iodoform gauze, the ends being left hanging from the inner half of each incision. Two stitches were taken in the right, and one in the left wounds, and a wet dressing applied.

Following "Tilley's" method the packing was gradually removed, several inches being cut off each day until the 4th, when it was entirely withdrawn. At the same time the anterior end of the left middle turbinal was removed under local anesthesia. From the 7th to the 9th days pus appeared in increasing quantities at

the external wound, and less and less in the nose. On the 10th day, under chloroform anesthesia, the cavities were reopened through the partially united wound, and the intervening septal wall completely removed, while the nasal openings were enlarged sufficiently to freely admit a forefinger, and a gauze drain of this thickness inserted down into the nose. The cavities were then carefully inspected, dusted with iodoform and the superciliary wounds closed by a pressure dressing.

The subsequent treatment, after the gauze drains in the nose had been removed two days later, consisted in daily flushing with boric acid solution, by means of a canula inserted in the nasal opening of one side and washing through the other. The discharge was very little at the outset, and rapidly decreased so that in about 4 weeks the flushing was entirely stopped, at which time the patient was allowed to return to his business.

Following the operation there was some slight discharge through both antral tubes, and on one occasion a suggestion of odor in that from the right. Systematic flushing was kept up, and the discharge from the antra gradually lessened until Dec. 10, 1903, there was but a mere trace. Early in January, 1904, the pyramidal spur which partially obstructed the right side was removed, so that free observation of this side could be made.

The preceding part of this report, with some remarks as to the etiology, was read on Jan. 18th, 1904, before the Fox River Valley Medical Association, in the belief that a positive cure had been established. Upon my return three days later I was called to see the patient, who was just emerging from a severe chill, and complained of intense pain in the head over both eyes. The temperature registered 104°. From each nostril there was a copious discharge of a thick muco-pus, which was removed by flushing the antra through the alveolar openings. The scar over the right frontal sinus was red and tender, and the tissues over the forehead were edematous. Examination of the nasal cavities showed a small amount of pus coming from both infundibular regions.

An ice pack was immediately applied over the brows, a purgative administered, and a radical (Killian) operation advised and accepted. This was performed at the Knowlton Hospital, Jan. 22d, Drs. Seaman, Holbrook and Hay assisting. Both frontals were treated by the Killian, and both antra by the Caldwell-Luc methods. The operation lasted 4½ hours, and was done under chloroform anesthesia, administered by Dr. Hay.

The Frontal Operation. Upon opening the frontals by the Killian skin and periosteal incisions extending from the outer ends of the brows, in an arching curve along the superciliary margin and down the side of the nose, the partially healed bony wounds of the previous operation were laid bare. These were enlarged and the cavities explored after the Killian method; they were found to be filled with considerable quantities of thick pus and granulation masses which were removed with the curette. In doing this an interesting illustration was afforded of the combined processes of repair and destruction. Upon removal of the outer tables, areas of soft, fibrous, newly formed bone were met with, around the margin of the old wound, while other areas higher up and on the inner table were pronouncedly necrotic. The two superciliary margins, and a median arch of bone, of the outer table, about $\frac{3}{8}$ of an inch in thickness, were left in situ, to support the soft tissues, while the floors were completely removed, first by working down from above, and then up from below, great pains being observed to avoid injuring the pulley of the superior oblique, and the lacrimal sac. The entire inner table was carefully inspected for softened areas, the left side exhibiting two, each about half an inch in circumference, which were removed, exposing the dura. The small amount of the septum which had been left by the previous operation was removed, and the bony edges and surfaces thoroughly smoothed. The under surfaces of the median and left arches were so softened that in one place the middle of the left arch was completely denuded of bone, only the periostium being left to hold the inner and outer segments together.

After entering the ethmoidal region, by removing the frontal processes of the superior maxillæ, and lacrymal bones, the anterior ethmoids were completely destroyed with the curette and Hartman's forceps.

The Antral Operation. The antra were then attacked through the canine fossæ. Here it may be well to note the impossibility of curing cases like this one by any such procedure as the small alveolar puncture, for both of these cavities were found to be filled with large firm polypi, and pockets of cheesy accumulations, and this, too, after months of incessant daily cleansing had been kept up. These accumulations were carefully removed with the curette, and, after checking the rather violent hemorrhage with gauze packing, the nasal walls were broken away, after removal of the anterior two-thirds of the inferior turbinals. The antral cavities were then

firmly packed with gauze and the cheeks allowed to fall into place. The dressings were then applied to the frontal wounds by the insertion of rubber tubes projecting from the temporal ends, down and into the nose, and after cleansing, drying and dusting with iodoform, the edges of the wound were carefully approximated with horsehair sutures, and a moist boric dressing applied. The nose was loosely packed with iodoform gauze which was removed the following day. The frontal tubes were removed on the second day, and the small openings left at each extremity were closed by pressure dressings. The patient rallied rapidly, and notwithstanding the long period of anesthesia, was able to sit up on the second day, at which time the antral packing was removed, and replaced, this time bringing the ends of the gauze out through the nasal openings. The buccal openings were allowed to permanently close. On the fourth day, all packing was abandoned. The patient was warned not to blow the nose, but to remove discharge by gentle douching and by drawing discharges into the pharynx. Cleansing was done with a boric solution and a 20 per cent. argyrol spray.

At the end of the third week, the patient was allowed to return to his business. The discharge, which was fairly copious at first, rapidly decreased, but for several months some persisted from the left antrum.

At no time was there any diplopia or marked visual disturbance, although about six weeks after the operation, probably due to contraction of the scar tissue, there was a tendency to rapid ocular fatigue, with some slight disturbance of the motility of the eye, which, however, passed away in ten days. Another point worthy of mention, was the appearance of two stitch-hole abscesses at the end of the second week. They occurred simultaneously and symmetrically in corresponding sutures, over each temporal end of the two wounds, discharged considerable pus, and disappeared rapidly under wet boric dressing.

As regards the etiology of this extensive condition of sinus disease and its persistent return after the thorough treatment it had received, we may be allowed to speculate, but owing to what seemed a decided tendency to bony necrosis, it was deemed wise to institute a course of iodide treatment which was kept up for three months.

The influence of carious teeth as a causative factor in antral suppuration, is well recognized, and the fact that on both sides of this patient's mouth there were dead teeth, the right one having

a septic condition at its root, would lead naturally enough to the assumption that this was the *fons et origo* of the disease. Granting this to be the case, how then did both frontal sinuses become involved? Owing to peculiarity of formation in certain individuals, the nasal outlets of the frontal, anterior ethmoidal, and antral cavities open successively into a gutter, the infundibulum, and therefore the discharge coming from any of these openings can readily result in an infection of the adjoining cells. In this case, it is my impression that the right frontal sinus became involved from the right antral condition, and that the left frontal became infected by contiguity of structure, or by direct invasion from erosion of the septal wall and that later the drainage on this side resulted in the invasion of the left antrum. Opposed to this theory we may suppose the entire infected area to be the result of some acute disease, say influenza, which is perhaps the most prominent factor in the etiology of sinusitis. Inasmuch as spontaneous cure of acute empyema of all these cavities is extremely common, it does not seem reasonable to believe that resolution should have failed in all four cavities, although it might have done so in one or two, and then reinfection have taken place in the others at a later period.

The spontaneous cure of chronic sinusitis rarely occurs. Therefore, when these cases are recognized it is essential to resort to some operative procedure. Of these operations we have the choice of a number of methods. So far as the antrum is concerned, the method finally adopted in this case, the Caldwell-Luc, is unquestionably the most practical, after the removal of any existing carious teeth and perforation of the antral floor. This latter procedure alone is at times all that is necessary, the subsequent free drainage resulting in complete cure. Of the frontal operations the "Killian" is the most radical and consequently the surest, as it completely obliterates the offending spaces, its only drawback being in some cases the resulting deformity. The case here reported is very similar to one mentioned by Dr. Eschweiler in his paper recently published in the *Archives of Otology* (October, 1904) and furnishes a striking example of the relative value of the Killian and Luc-Ogston methods.

Owing to my previous "too previous" report of this case, I have thought best to allow an adequate period of time to elapse before presenting this paper. It is now 11 months since the operation, and the patient who reports to me at intervals, for inspection, states that he has been in far better health than for many years.

One curious result has been the disappearance of a pronounced acne vulgaris of many years' duration.

The resulting deformity is inconsiderable when one considers the great pre-existing overhanging superciliary bulge, and, on the whole, the operation has resulted in giving the face a genial in place of a previous somewhat lowering expression.



(“Since this paper was accepted for publication patient has succumbed to an attack of double pneumonia of three weeks' duration—death occurring Mar. 25th. Up to the onset and throughout his recent illness there were no symptoms of any disturbance in the region of his accessory sinuses. One may be allowed to speculate as to whether the excessive freedom of the nasal chambers could have been in any way a contributory cause of this last illness.”)

**Acute Aniline Poisoning after the Use of a Local Anesthetic
in the Ear—MARTIN SUGAR—*Arch. f. Ohrenh.*, Leipzig,
Aug. 26, 1904.**

The use of Gray's solution of cocaine in aniline oil, which gives a better anaesthesia than cocaine alone, is not without danger. The methæmoglobinæmia caused by the aniline is accompanied by severe general symptoms. In the case here reported, the mixture was used for the removal of granulations from the ear of a girl 9 years old, and was followed by headache, vomiting, vertigo, stupor and convulsions, ataxic gait, and marked cyanosis. These symptoms persisted for a number of days. It is possible that anæsthesin and similar drugs may produce similar poisoning in patients having an idiosyncrasy for the aniline derivatives.

YANKAUER.

TURBINECTOMY.*

BY DUDLEY S. REYNOLDS, A.M., M.D.

Member of the American Medical Association; the American Association for the Advancement of Science; the British Society of Arts, etc.

The shape, the size, and the course of the passages and crypts of the nose, and its accessory sinuses and cells, are as variable as are any other individual features, and perhaps more so.

The relations of the inferior turbinate bodies to the superior passages, cavities, crypts, and sinuses of the nose, are always such as to limit, interfere with, or prevent free drainage from the spaces above. Deviations, ridges, and spurs of the septum, in contact with the inferior turbinate body, pressing into the space between the inferior and middle turbinates, against the middle turbinate, or as is sometimes the case, presenting irregular projections in two or more of these situations, may all be relieved by removing completely the inferior turbinate body.

Few septal ridges and spurs are attended by any inconvenience to the patient, unless they create obstructions to the free passage of air through the nose, as well as the free outlet of mucoid, or purulent discharges. Vegetations in the vault of the pharynx, and nasal polypi are the common results of such nasal obstructions as prevent free drainage of all cavities, crypts, and sinuses.

In many cases of adenoid vegetations in the vault of the pharynx instant relief to the distressing symptoms of obstructed nasal respiration, and ultimate shrinkage and disappearance of the adenoid vegetations themselves, follow complete turbinectomy.

In cases where the inferior turbinate bone projects far into the pharynx, adenoid vegetations are nearly always present, and the removal of the inferior turbinate body gives prompt relief to the distressing tinnitus and deafness usually present in such cases. This is the natural result of taking away the obstructions at the inferior extremity of the Eustachian tube, and allowing free circulation of air, as well as free drainage to the parts.

In cases of nasal polypi long continued obstruction from the swelling of the soft structures covering the bony walls, in close proximity, constitutes the cause; and it may be necessary, in order to pre-

* Read at the Ninth Annual Meeting of the American Academy of Ophthalmology and Oto-Laryngology, held at Denver, Colo., August 26th, 1904.

vent the recurrence of such growths, to take away not only the entire inferior turbinate body, but a considerable portion of the middle turbinate.

In my experience, the removal of septal ridges and spurs, where real obstructions exist from the proximity of the inferior turbinate body to the floor of the nasal passages and the presence of adenoid growths behind it in the pharynx, accomplish no material relief, whilst removal of the inferior turbinate body alone secures a free outlet through the inferior nasal passages for all morbid accumulations in the spaces above, and what is equally important, it gives free circulation of air through the Eustachian tube, and the pharynx. I have never known occlusion of the inferior extremity of the lachrymal duct to follow this operation; per contra, I have frequently had patients who had long suffered with sticticidium lachrymarium, entirely relieved by inferior turbinectomy.

Now, a few words as to the mode of operating. Having blanched the membrane first by spraying it with a 1 to 1000 solution of chloride of adrenalin, and then by packing small bits of cotton wool saturated with this solution into the upper sinuses as far as possible, remove this packing, and replace it with portions of cotton wool saturated in a solution of cocaine, made by dissolving $\frac{1}{2}$ drachm of the muriate of cocaine in one ounce of distilled water. The cocaine packing should be put into all the available spaces in the side of the nose to be operated on, including a liberal supply beneath the inferior turbinate. This packing should reach the pharynx, if possible. Experience shows that not more than ten minutes, nor less than five should elapse between the time of introducing the cocaine and beginning the operation. The operation itself should always be done with a saw. I have found that even in cases of great deformity, where the curvature is as great as the quadrant of a circle, the saw can be bent around, and easily moved in the line of curviture.

To show the varying shapes of the inferior turbinate body I submit thirty-four specimens, taken at random. In many cases it has been necessary to divide the specimen with the bone scissors before attempting its removal through the anterior meatus. In fact it often happens that the inferior turbinate bone is much broader than the anterior meatus of the nose can give exit to. In some cases the base of attachment is thick and highly arched near the anterior extremity. In many instances the line of attachment is but slightly curved. In some the base of the inferior turbinate body is so thin that not more than three or four strokes of the saw are required to sever it. In others, the bone is so thick, so dense in structure as to resemble ivory.

in its resistance to the saw, and it is removed with great difficulty, requiring sometimes as much as three or four minutes to complete its division.

The size and conformation of the nose externally affords no suggestion as to the shape, size and structure of the inferior turbinate body within.

After the operation of turbinectomy it is best to use some form of pack, which should always be limited to the region of the operation itself, without extending, or attempting to introduce it above the inferior edge of the middle turbinate. Where it is possible to allow free respiration through the middle or superior passages, it is best to do so.

The very best form of pack is made by taking a quantity of cotton wool, and, rolling it in a little piece of gauze, just sufficient to cover it. Seizing this at one extremity with the ordinary small angular dressing forceps, it may be easily carried back to the pharynx, and with the forceps you may then press laterally so as to force it up into close contact with the wound along its whole extent. Usually this pack should be removed about 48 hours after the operation.

In those persons especially prone to bleed, the surgeon must use his own judgment and skill in restraining hemorrhage. I have found that a quantity of tannic acid, in the dry state, enclosed in the roll of cotton wool, of which the pack is made, answers the purpose in most cases. In a few, the administration of ten grains of gallic acid every hour or two has been found a necessary adjuvant to the local measures.

When the packing has been removed, which should always be done before any suppurative manifestations occur, some form of saline antiseptic spray should be employed. In those cases where there is no pus, or muco-pus, present at the time of operation, the best form of spray is this:

B	Sodii Boratis	3iiss
	Sodii Chloridi	5i
	Aquaæ Camphoræ	
	Aquaæ Menthæ pip	aa 5viii
M	Ft. Solutio.	

Sig: Use as a spray for the nose, every three hours.

In cases of chronic purulent infection, where it is impossible to thoroughly cleanse the passages before operating, the following mix-

ture may be used, before applying the dressing and subsequent to its removal:

R	Glyco Thymolini	
	Aquaæ Menthae pip	aa 5viii
	Sodii Chloridi	5i
	Hydr. Bichloridi	gr.ii
M	Ft. Solutio.	

Sig: Use as a spray for the nose every two hours.

In conclusion, I feel constrained to say it is quite difficult to obtain good saws. In my judgement, the operator will need two kinds; one with fine teeth of uniform size, and one with coarser teeth, interrupted by spaces, or notches. The teeth should be cut at such angle as to permit the saw to do all its cutting by the pushing motion, and none by the movement of withdrawal. The blades should not be too narrow, one-eighth of an inch being about the correct width. The cutting edge of the saw should not be less than three inches in extent. The tip end of the saw should be well rounded and smooth, but not bulbous, because of the difficulty of withdrawing it from the groove made by its cutting edge. The back edge of the saw should be slightly thinner than the cutting edge, and the teeth should never be set, as in the wood-worker's saw. It is a question still sub judice with me, as to whether the teeth should be cut with their surfaces exactly at right angles to the long axis of the blade, or in an alternating, oblique direction like the wood saws.

The adjustable saws made for me by Dr. Allen DeVilbiss have served my purposes best. The blades, however, should not be so narrow as to permit them to bend easily, on pressure.

For cutting thick, hard bones, the coarse interrupted teeth do not clog so easily, and the cutting power of this form is greater.

For thin bones the smaller and more closely set teeth are most satisfactory. Dr. Seaton has recently devised a form of saw with isosceles-triangular teeth divided by cutting them directly through from apex to base, in a line perpendicular to the plane of the cutting edge, thus making two rectangular triangles in close proximity.

REYNOLDS: TURBINECTOMY.

309

No.	Date	Age	Sex	SYMPTOMS		TREATMENT	RESULTS
				Obstruction	Discharge		
1	1908 July 3	22	M.	Chronic muco-purulent discharge, asthma, tinnitus, impaired hearing.....	.....	Removed both inferior turbinates; Eustachian catheter occasionally spray.....	Dr. B. continued spray, reported complete recovery 3 weeks.....
2	" 20	48	M.	Obstruction, Chronic Cataract.....	.....	Removed left inferior turbinate; antiseptic saline spray.....	Recovery in 10 days.....
3	" 21	18	M.	Obstructed respiration, adenoids, septal ridges and spurs.....	.....	Removed both inferior turbinates; borate and chloride of sodium spray.....	Recovery in 3 weeks.....
4	Aug. 3	34	M.	Complete obstruction both sides; asthma, adenoids, septal ridges.....	.....	Removed both inferior turbinates; used borate of sodium spray.....	Complete recovery in 10 days.....
5	" 7	25	M.	Obstruction, adenoids, asthma, tinnitus, impaired hearing.....	.....	Removed right inferior turbinate; used saline spray.....	Recovery in one week.....
6	" 81	46	M.	Nearly complete obstruction, tinnitus, impaired hearing.....	.....	Removed both inferior turbinates; used saline spray.....	Died 48 hrs afterward with congestive chill.....
7	" 40	40	F.	Obstruction nearly complete, asthma, tinnitus, adenoids.....	.....	Removed both inferior turbinates; borate and chloride of sodium spray.....	Greatly relieved, discharged in one month
8	Sept. 22	19	M.	Month breather, tinnitus, impaired hearing, adenoids.....	.....	Removed both inferior turbinates; used borate of sodium spray.....	Eustachian recovery in 4 weeks.....
9	" 26	48	M.	Asthma, nasal obstruction, septal ridges and spurs, tinnitus.....	.....	Removed left inferior turbinate; saline spray.....	Complete recovery in 8 weeks.....
10	" 26	51	M.	Obstruction, coryza, adenoids.....	.....	Removed right inferior turbinate; saline spray.....	Eustachian recovery in 8 days.....
11	Oct. 12	50	M.	Nearly complete obstruction, frontal headache, tinnitus.....	.....	Removed both inferior turbinates.....	Complete recovery in 6 weeks.....
12	" 26	22	F.	Chronic catarrh, headache, coryza, adenoids.....	.....	Removed right inferior turbinate; bichloride spray.....	Recovery in 14 days.....
13	" 28	26	F.	Nasal obstruction, septal ridges, coryza, adenoids.....	.....	Removed left inferior turbinate;.....	Complete recovery in 20 days.....
14	" 40	28	F.	Frontal headache, coryza, tinnitus, impaired hearing.....	.....	Removed right inferior turbinate, saline spray.....	Complete recovery in 4 weeks.....
15	Nov. 11	40	F.	Complete nasal obstruction, septal ridges, otitis, impaired hearing.....	.....	Removed right inferior turbinate; spray.....	Complete recovery in 5 weeks.....
16	" 14	24	F.	Complete obstruction, adenoids, otitis media of 12 years standing.....	.....	Removed left inferior turbinate; spray.....	Complete recovery in 28 days.....
17	" 21	24	F.	Complete obstruction, adenoids, otitis media of 12 years standing.....	.....	Removed right inferior turbinate; saline spray.....	Same patient
18	" 21	28	M.	Complete obstruction, polyp left side, otitis media right side, impaired hearing.....	.....	Removed both inferior turbinates and large fibroid from left side; spray and catheter.....	Complete recovery in 4 months, restoration of hearing.....
19	" 23	38	M.	Obstruction, septal ridges, impaired hearing, tinnitus.....	.....	Removed left inferior turbinate; catheter and spray.....	Almost complete recovery in 8 days.....
20	1904 Jan. 11	17	F.	Complete nasal obstruction both sides; otitis media right side, 10 years standing.....	.....	Removed both inferior turbinates, disclosing adeno-idealoid and septal ridge.....	Complete recovery in 4 months.....
21	" 25	27	M.	Complete nasal obstruction both sides; impaired hearing, tinnitus, etc.....	.....	Removed right inferior turbinate; bichloride spray.....	Complete recovery in 5 weeks.....
22	" 25	27	M.	Complete nasal obstruction both sides; impaired hearing, tinnitus, etc.....	.....	Removed left inferior turbinate; spray.....	Same patient
23	Feby. 1	22	M.	Complete nasal obstruction both sides; tinnitus, impaired hearing.....	.....	Removed both inferior turbinates, spray.....	Complete recovery in 8 weeks.....
24	" 26	38	F.	Obstruction, coryza, chronic catarrh.....	.....	Removed both inferior turbinates; spray.....	Complete recovery in 14 days.....
25	March 1	13	F.	Complete obstruction, septal ridges, adenoids, impaired hearing.....	.....	Removed both inferior turbinates; spray.....	Complete recovery in 5 weeks.....
26	" 1	62	F.	Nearly complete obstruction; tinnitus, asthma.....	.....	Removed both inferior turbinates; borate and chloride of sodium spray.....	Complete recovery in 4 weeks.....
27	" 4	26	F.	Nearly complete obstruction; adenoids, coryza, tinnitus.....	.....	Removed right inferior turbinate; saline spray.....	Complete recovery in 10 days.....
28	" 14	18	F.	Complete obstruction; septal ridges, adenoids, impaired hearing.....	.....	Removed right inferior turbinate; spray.....	Complete recovery in 4 weeks.....
29	" 19	21	M.	Complete obstruction right side, chronic catarrh.....	.....	Removed left inferior turbinate; spray.....	Complete recovery in 3 weeks.....
30	" 20	46	F.	Nearly complete obstruction; chronic catarrh, otitis media, has had mastoid operation.....	.....	Removed left inferior turbinate; spray.....	Complete recovery in 3 months.....
31	April 4	27	M.	Obstruction, septal ridges, adenoids.....	.....	Removed both inferior turbinates.....	Complete recovery in 20 days.....
32	May 18	32	M.	Complete obstruction left side; septal ridge, chronic catarrh.....	.....	Removed left inferior turbinate;.....	Complete recovery in 8 days.....
33	" 20	36	M.	Nasal obstruction, coryza, tinnitus.....	.....	Removed left inferior turbinate; saline spray.....	Obstruction and tinnitus relieved in 8 days.....
34	" 22	40	F.	Chronic catarrh, obstruction nearly complete, asthma.....	.....	Removed both inferior turbinates and polypl; saline spray.....	Complete recovery in 2 months.....
35	" 30	55	F.	Complete obstruction left side; polyps; epiphora of long standing.....	.....	Complete recovery in 5 weeks.....	

N. B. This table explains the cases from whom the specimens submitted were taken.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Postponed Meeting, February 1, 1904.

LEWIS A. COFFIN, M.D., Chairman.

PRESENTATION OF CASES.

Temporary Resection of Both Superior Maxillæ for Naso- Pharyngeal Tumor.

DR. FREDERICK KAMMERER presented this patient. He had a history dating back six years. He first came under the care of Dr. Gleitsmann who removed a polypus from the left nasal cavity, which relieved him for 3 years. At the end of that time Dr. Gleitsmann removed another polypus.

Following this, pieces of tumor were removed on a number of occasions. About a year ago an attempt was made to remove the large mass after deflecting the entire nose to the right side, but this operation failed owing to severe hemorrhage.

The patient then continued practically without treatment for six months, until he was seen by Dr. Kammerer in July, 1904. It was then decided to do the operation devised by Kocher. After ligating both external carotid arteries and dividing the lip in the median line, both superior maxillæ were temporarily divided with a chisel and pushed to either side in the manner first described by Kocher, exposing both nasal cavities from below. When the tumor was exposed, it was seen to spring from the body of the sphenoid bone. The doctor here showed the tumor which he said had shrunken but was still of unusual size. As soon as the traction on both sides was relinquished, the bones came together readily and were held in place by a silk thread tied about the middle incisors.

The Doctor said that, of course, in the majority of these cases of fibromatous tumors in the naso-pharynx, such an operation was unnecessary; but that in an instance of this kind, where the tumor developed to such a degree, and where recurrences were frequent, he thought it a good one. It was considered so formidable an operation that it was doubtful whether it would find favor among

the profession. Still it had answered a purpose in this case, in which probably other primary operations on the soft parts and bones of the face would have given an insufficient exposure.

DISCUSSION.

DR. CHAPPELL said that this subject had been discussed many times before the Section; and he thought that all agreed that, certainly, in the earlier stages of tumors, these severe operations could be guarded against, but that this was the largest tumor he had ever seen, and it seemed to him that it would have been impossible to have removed it by any of the methods which had been considered in the Section. He thought that Dr. Kammerer should be congratulated upon the result obtained.

DR. EMIL MAYER asked Dr. Kammerer whether the cuts made with the chisel on either side went through the septum, and whether there had been any difficulty in getting those parts to unite. He also wished to know about the anaesthesia, as the continuation of the anaesthetic was one of the greatest difficulties in mouth operations of prolonged duration.

DR. HARRIS inquired how long it had been since the operation was performed, and upon receiving the reply that it was done last July, said that he had seen a patient of Dr. Swain's who had been subjected to the Doyen operation some three years ago, with the temporary ligation of both carotids, but that the tumor had returned very shortly, within six months of the very formidable operation. It would be interesting to know whether in this case the growth recurs later. The matter had been before the Section several times, and he thought the consensus of opinion was that the most desirable results are obtained by early intra-nasal operations. Dr. Delavan had shown by his statistics great success in the use of the galvanocautery snare.

DR. KAMMERER (closing) said that the patient was 19 years of age. Replying to Dr. Mayer, he said that the septum was pushed entirely to the right side, and that in dividing the maxilla in the median line with a chisel, he had on this occasion, entered the left nasal cavity. The question of anaesthesia was a very interesting one, and much had lately been said on that point, which it was hardly necessary to bring forward here. This patient had never been completely under the anaesthetic. The speaker said that he preferred a half sitting posture for operations on the superior maxilla.

In response to a query as to whether he used tracheotomy, he replied that he never did, as he thought that tracheotomy favored pneumonia.

Extirpation of the Larynx.

DR. HENRY P. MOSELEY presented this case. He said that it gave him pleasure to introduce to the Section Dr. Wald, a fellow practitioner in the city. Dr. Wald was one of Dr. Bosworth's patients, and had kindly consented to appear before the Section in order that they might see the results of an operation performed at Vienna about a year and four months ago, October, 1903, when almost all of the larynx was removed. He had a history running back about five years. The first symptom was a slight hoarseness. He had seen several men, and the general opinion was that it was simply a chronic congestion which caused it. Later other diagnoses were made, but the final one not until shortly before the operation, when in Vienna a small portion was removed, and the pathologist pronounced it a flat epithelial carcinoma. About 8 days later, after a preliminary tracheotomy, most of the larynx was removed. All of the thyroid was taken out, the vocal cords, and part of the arytenoids. The cricoid was left in. Immediately after the operation he lost a great deal in weight, owing to difficulty in feeding, but now he has regained nearly his normal weight, and goes about his business, doing almost all of his medical work. He talks in quite a loud whisper, as could be heard.

A very interesting point in connection with the case was the apparatus which had been devised for his use. Naturally there was a tendency for the soft parts to fall in, as there was nothing left to hold them up, so this little arrangement was devised, which resembles a chimney. Dr. Wald slides this chimney through the tracheotomy wound so that the upper part is on a level with the wound, thus preventing the remaining portion of the arytenoids and the other soft tissue from falling in; then he slides the tracheotomy tube in through the bottom of the chimney, puts a cork in, and breathes through his natural passages. It works very well and has given him very little trouble.

In reply to an inquiry as to the location of the growth, Dr. Moseley said that Dr. Wald told him that it was situated just below the vocal cords, but it was thought to involve the vocal cords and ventricular bands as well.

DISCUSSION.

DR. DELAVAN said that Mr. Bond, of London, had devised a mechanism of this kind, consisting of a small canula arranged to go

inside the main tube and curved upward through a large fenestra in the top of the main canula. It was easily inserted and easily removed, and intended for the same purpose as the apparatus just exhibited.

DR. CHAPPELL said that the point that struck him was that some parts of the larynx had been left in, and that it seemed to him in a case so severe as to demand the radical operation this feature presented danger of a recurrence possibly at an early date. Of course this was done in order to preserve his speech, as otherwise he could not have spoken as he does, but where it was deemed necessary to resort to so severe an operation, he himself thought it would have been wiser to have removed all of the larynx.

Three Cases of Tubercular Laryngitis.

These were shown by DR. FREUDENTHAL, who said that they presented no unusual features but that he had brought them at the suggestion of the Chairman in order to elicit a discussion as to treatment. The first patient had an infiltration of the left ventricular band, which was better now; the second had ulcerations on both vocal cords; and the third was in another stage of the disease showing outgrowths of the interarytenoid space and diffuse infiltration of the arytenoid region.

A Case of Tubercular Laryngitis.

DR. HUBBARD presented this case. The patient had presented himself at the Mt. Sinai Hospital some time in September, coming with the history of having been examined in London by Dr. St. Clair Thompson, who pronounced the disease tubercular laryngitis. After he came here he was under observation for some little time, and for a while it was considered questionable as to whether or not the case was tuberculous. He had a papilloma on the right vocal cord which gave him no pain, but he was decidedly hoarse. Some time later, his condition seemed to be growing worse, a careful examination of his chest was made, and the right apex was found decidedly involved. The left side was not involved. His temperature was running about 100° in the evening, and he was losing weight. He was put upon codliver oil and treated constitutionally, with no local treatment of the larynx. Since then he has been gaining, though the condition of his chest has remained about the same. About six weeks ago Dr. Wright examined a specimen from his throat, and found very suspicious signs but no definite evidence;

though, if the specimen had been taken lower down, this evidence might have been obtained. At present the man's general health is improving, and it is very obvious now where the tumor is.

DISCUSSION.

DR. FREUDENTHAL said that he understood that the discussion was to be on the subject of the treatment of tubercular laryngitis and that he would limit himself to that point. He had intended to bring other patients before the Section to illustrate different stages of the disease, but had been able to procure only such as were not far advanced in the disease. The patients he had brought did not really represent all he intended to show.

In the treatment of tubercular laryngitis we had to be governed by the symptoms which present themselves. The first patient presented, and to whom Dr. Chappell had referred, whose physical condition appeared to be very good, had complained only of the hoarseness. That was not a very serious matter. If such cases recover, it made very little difference whether or not the voice was somewhat affected. There were exceptions, however, to this rule. When, for example, the patient's general condition improved quickly portions of the overhanging infiltrated substance could be removed from the vocal cord and the voice thus restored. It was the exception, however, for the patients to be completely cured with good voices.

Another much more important symptom was pain, and this was observed most frequently in ulcerations of the larynx. He had brought the other patient, not as an illustration of a cure, but to show the effectiveness of treatment in relieving pain. The young man had been suffering with ulcerations on both vocal cords, and before Dr. Freudenthal had seen him he had been treated with lactic acid, creosote, and various other remedies, but without avail. Treatment with the orthoform emulsion then began, and since that time the young man had suffered absolutely no pain. If relief from pain could be secured for the patient, nature would do whatever else was necessary to effect a cure. As a rule, he did not curette these ulcerations, but occasionally he used the galvano-cautery with a very fine point, giving this treatment every week or two, and sometimes with very satisfactory results.

Another symptom which required treatment was the *cough* of laryngeal origin. He had a patient with an infiltration and outgrowths in the interarytenoid region, which so far as he could see was the only reason for the cough which troubled her, and he

thought this was an indication for the removal of the infiltration. This was one of the exceptions in which he would recommend curetting. Another exception could be made in the case of dyspnoea; but here the results were not always encouraging.

In a case which he had seen a few weeks before, the result of curetting was so bad that he was not inclined to try it again. It had been necessary to remove a large portion of the infiltrated mass, but this was followed by a very severe haemorrhage from the lungs and it had been necessary to omit the curettage of the other side of the larynx; a few days later another severe haemorrhage followed, and the patient went down rapidly. In such cases he was inclined to believe that tracheotomy was the better treatment. Six or eight years ago he had performed a tracheotomy for an acute dyspnoea, and the patient was still living. He had been surprised to meet him not long before and he was apparently feeling quite well, still wearing his tracheotomy tube. Dr. Freudenthal would not, however, recommend tracheotomy as indicated by Moritz Schmidt and a few others.

Considering the question of *climate*, he related an instance of a patient who came to the hospital half starved and played out, having been overworked for years. This patient was treated with rest and good food, and improved rapidly. In all such cases the rest cure was the best for the patient, and it was frequently advisable to leave the larynx alone. Later on a rest cure was not indicated. The speaker said he was just as much in favor of sending patients to the seaside, especially in a warm climate as to the mountains. This treatment was much approved in France, and many cures were reported there. In his own experience some patients did better at the seashore than in the mountains during the winter. On the south shore of Long Island the winds were not so severe as here in New York, and many patients do quite well even there. But the question of whom to send to the mountains and whom to the seashore, has not been settled yet.

DR. FREUDENTHAL replied that he used a laryngeal syringe and dropped in two or three drops of the orthoform emulsion at a time. He used it in combination with menthol and yolk of an egg. The treatment was very tiresome for the physician, but if we succeed in getting a few drops over the ulcerated surface to be absorbed in loco, the patient was much relieved. He had used anæsthesine powder in some cases and it had done good service, but he was not yet prepared to recommend it for all cases. So far, orthoform emulsion had proved most satisfactory for the cases of ulceration:

that he had treated, and in his hands had been of the greatest benefit in treating cases afflicted with laryngeal tuberculosis.

DR. BEAMAN DOUGLASS said that the most satisfactory results in his experience with tubercular laryngitis had been obtained from cauterizing with a solid stick of silver nitrate. He had practically abandoned lactic acid and creosote. For after treatment he used iodoform and ether upon the whole surface of the larynx. This treatment he had found to heal the ulcerations quite satisfactorily, and the patient would go along until other ulcerations develop, when the treatment could be repeated. Anesthetic treatment had not succeeded very well with him, though he had tried all anesthetic remedies, from cocaine to orthoform.

DR. HARRIS said that he had been very much interested in this discussion of the treatment of tubercular laryngitis, which was a subject of so much importance. Dr. Chappell would probably recall that not long since he had asked his personal opinion on the value of climate in such cases, and at the same time he had written to several men in the West, including Dr. Robert Levy of Denver, asking the same question. Dr. Chappell replied that he had seen some very satisfactory results where the patient had been referred to a proper climate. It was, however, the class of cases that could not be sent away on account of their financial condition for whom we were seeking some method of relief. Of course some excellent results are obtained with lactic acid, nitrate of silver, and other such remedies but we must look for advance along the newer methods. Many cases have done as well when left entirely alone as others have done under some form of treatment, and he often wondered whether, as Dr. Freudenthal had intimated, the curette did not many times hasten rather than cure the disease.

He had been particularly interested in two methods of treatment that had been referred to: first, the galvano-cautery, of which Dr. Freudenthal had spoken. He had not long since read an article by Dr. Mermod, of Lausanne, who has accomplished the most remarkable results with this treatment. Out of 280 cases he was able to report 80 cures of laryngeal tuberculosis extending over a year, 40 cures extending over two years, and 17 cases remaining cured at the end of three years and upward. After complete cocaineization, Mermod proceeds to eradicate all the infiltration. Dr. Harris himself had tried this method within the past few weeks in a patient with a quiescent condition of the lungs. The infiltration filled the posterior commissure, but with the aid of cocaine he had been able

to eradicate almost all the infiltration without any subsequent œdema. The other method, tracheotomy, referred to by Dr. Chappell was not new, but had been used by Moritz Schmidt over 20 years ago where stenosis existed, causing dyspnoea, where there was a large amount of laryngeal trouble, and finally where all other treatment had failed. The treatment had been thrown aside for many years, but he was convinced that where the indications described by Schmidt had existed and good conditions of the lungs could be shown, we had not used tracheotomy as we should. He intended to try this treatment in the first suitable case that presented itself to him.

DR. DELAVAN said that the value of rest in a badly inflamed larynx was beyond question. This was true of many conditions, not least so in laryngeal tuberculosis. To the application of tracheotomy, however, in advanced cases of tubercular laryngitis, there were many objections, some of which obtained to tracheotomy in general and so to the operation when performed in this particular class of cases. The presence of cough, of expectoration or of dysphagia from any cause not directly connected with the presence of the tube itself, were all factors which created much difficulty in a patient wearing a tracheal canula, no matter what might be the origin of these symptoms. Many an otherwise promising case of tracheotomy had been lost through their irritating presence. In tubercular disease, however, the above mentioned symptoms were often present at their worst and the expulsion of large quantities of tuberculous sputum through the tracheal tube was distressing to the patient and a menace to his attendants. Moreover, if the disease of the larynx were at all advanced, it was difficult to prevent the tracheotomy wound itself from becoming infected, no matter how great care might be exercised to prevent it. The speaker had seen several such cases where the condition of the patient had become most pitiable and where the operation had signally failed in adding to his comfort and well-being. There were means of placing the larynx in a position of rest other than by tracheotomy. The method of intubation, proposed by Dr. O'Dwyer, was the expedient to which he referred. By means of the O'Dwyer tube, as much rest could be imparted to the larynx as by tracheotomy. The presence of the tube was, as a general rule, well borne, and its influence in diminishing œdema was valuable. Ulcers already present in the larynx did not seem to be irritated by the tube nor did new ulcerative processes seem to be encouraged, while the steady pressure of the instrument upon infiltrated parts caused a subsidence

of the œdema which was often rapid and marked. The speaker had seen a number of patients treated successfully in this way, and felt that whenever possible the O'Dwyer tube should be used in preference to the insertion of the tracheal canula. The most striking instance that had come to his notice was that of a young married lady living in New York city, whom he had seen in consultation in the hope that some means might be devised for overcoming the urgent dyspnoea which threatened her life. In this case the tubercular process was far advanced in both lungs. The larynx showed most extensive œdema of the epiglottis and posterior parts of the larynx, with much ulceration in the interior of the larynx and about the epiglottis. The closure of the larynx was so extensive as to make breathing almost impossible. Aside from the objections to tracheotomy already enumerated, the strength of this patient was so feeble that any operation would have been out of the question. The O'Dwyer tube was inserted without difficulty and was worn with comfort by the patient continuously for about six days, during which time she was able to breathe normally and to take nourishment without difficulty. The swelling of the larynx having apparently subsided to a sufficient degree to warrant the removal of the tube, it was taken out, and its reinsertion was not required for about six weeks when the œdema again became sufficiently marked to require its presence. After a few days wearing of the tube, the history of the first experience repeated itself and a reprieve from dyspnoea was gained for several weeks more when the tube was again introduced, and this was continued, the tube being inserted when needed, up to the time of the patient's death, which occurred painlessly from asthenia. At no time did the tube cause pain or inconvenience in this case. It was worn with entire comfort to the patient and its reintroduction was welcomed by her whenever the breathing threatened to become at all difficult.

It might be fair to state that the young physician who had this case in charge contracted tuberculosis, as he believed, from the intimate contact with the patient made necessary by the introducing of the tube.

The speaker believed that the advocacy of tracheotomy in tubercular laryngitis by some foreign observers should have little influence with us, as the arguments for and against its use were not only simple in themselves but susceptible of verification by any man of common sense and good power of observation. Moreover, intubation as practiced in this country by the pupils of the great O'Dwyer was practically unknown in Europe. If tracheotomy were to be employed at all, it would certainly be necessary to use it in

cases selected with the utmost care. And, in any event, he believed that there would be few instances in which a preliminary trial of the O'Dwyer tube would not be worth while even if tracheotomy seemed ultimately necessary.

DR. EMIL MAYER said that the most interesting part of this discussion was the part that tracheotomy played and he wished to add to the number of cases already cited, one of his own which, in brief, was as follows:

Some years ago, he was called to see a woman about 35 years old who was suffering from much dyspnea. For three nights she had not been able to lie down and her dyspnea was constantly increasing. Her voice was almost gone, and her physical condition was poor. There was a large tumor in the inter-arytenoid space; and as her history was that tubercle bacilli had been often found in her sputum and she had general tuberculosis, it was evident that the growth was tubercular.

Her dyspnea becoming urgent, he performed tracheotomy. A week later, during his absence, his assistant after cleaning the tube was unable to return it; and, as there was no further dyspnea, it was left out altogether. From this time on, the patient made an uninterrupted recovery; and though a part of the tumor is still visible, the patient is well and has had no recurrence in 5 years.

In the Southern California Medical Journal of recent issue Fleming has an article on the Treatment of Tubercular Laryngitis which may be summed up thus: Formalin injections, the climate of Southern California, the prognosis good.

There was one other thing to consider regarding the choice of climate for patients, and that was the patient's own power of resistance to rigorous weather. It would not do to send a young woman, sensitive to cold, to the bitter cold of the Adirondacks. Rather should she be sent to a warmer clime.

DR. SWAIN said that as straws show which way the wind blows, perhaps single cases would have some value. He told of a patient with ulceration of the epiglottis and beginning tubercular lesion in the lungs who had been sent to the Adirondacks and gained twenty pounds in six months, but with no change in the epiglottis. Lung symptoms were practically wanting. By the simple surgical operation of snipping, Dr. E. R. Baldwin had removed the portion which was tuberculous, and the wound had healed perfectly. The patient was doing well in every way at present. He believed that complete removal of a diseased area should be done wherever practicable, exactly as the surgeon does with a tubercular joint.

He also thought that sometimes intubation was an excellent substitute for tracheotomy. He then told of some work that Dr. Maher of New Haven was doing in the use of injections of the products of a germ termed the X bacillus. Considerable reaction sometimes followed the injections. In one instance, the patient had marked oedema of the larynx making breathing quite difficult. An intubation tube was introduced two or three different times and each time worn for a day or more with the greatest relief and comfort. It would be possible to get some effect on the ulcerations while the tube was in, if the tube was smeared with any desired substance and allowed to dry. This was aided by the use of mucilage. The medicament would be applied to the interior of the larynx with very beneficial result.

DR. CHAPPELL said that Dr. Freudenthal had expressed surprise that he had not mentioned orthoform. He had not mentioned any remedies, but simply said that he used measures for the relief of pain. He quite agreed with what Dr. Douglass had said, and had himself used orthoform without any success, when the pain was severe.

DR. FREUDENTHAL said that everyone noted how marked was the relief from pain following the use of the emulsion. This had been and still was the worst symptom with which we had to deal. He was surprised that so few men reported good results. Single cases did not prove anything.

Foreign Body in the Bronchus; Removal with the Aid of the Bronchoscope; Recovery.

This case was reported by DR. SIDNEY YANKAUER (New York City) as follows: On January 24th, at 11:30 a. m. I was hastily summoned to see a child 10 months old, who was said to be choking. Responding promptly, as the patient lived near to my office, I found a well-nourished boy coughing constantly, and the following history was given. The child had taken an orange pit into his mouth. The mother attempted to remove it with the finger, when the child, beginning to cry, took a deep breath. The orange pit disappeared and the child was immediately seized with coughing, dyspnoea and cyanosis.

The child took deep and rapid breaths, he was somewhat cyanotic; and after each third or fourth respiration had an attack of spasmodic coughing. Pulse 120. Laryngoscopic examination was made with some difficulty on account of the small size of the throat; but

it was possible to see the entrance of the larynx. The foreign body was not seen. Digital examination was also negative, and the fact that the child cried with a clear voice convinced me that the foreign body was not lodged in the larynx. The breathing was loud on both sides of the chest, and there were coarse sonorous rales on both sides of the chest. Diagnosis of foreign body in the trachea or bronchus was made, and Dr. Emil Mayer was called into consultation. He confirmed the diagnosis and advised immediate operation. The child was then removed to a private hospital and at 3:30 p. m. of the same day, four hours after the accident, he was operated on. Examination of the chest just before the operation showed that the right chest moved much less freely than the left. The normal respiratory murmur on the right side was absent and was replaced by a faint inspiratory sibilant rale, loudest in the second half of inspiration. On the left side, the breathing was exaggerated.

Chloroform was administered, primary anaesthesia only being induced, and inferior tracheotomy was performed with the assistance of Dr. Emil Mayer. A probe was readily introduced into the mouth through the tracheotomy wound and larynx, showing that the foreign body was not present there. A bronchoscope, 7 mm. external diameter, was then introduced into the tracheal wound and pushed forward until near the bifurcation. The foreign body could then be plainly seen, lying with one end impacted in the right bronchus, the other lying against the opposite wall of the trachea. It was seized in the bronchoscopic forceps, but could not be withdrawn through the narrow lumen of the instrument, so that bronchoscope and foreign body were withdrawn together. The orange-pit measured 17mm. long, 6mm. wide, and 5mm. thick. A tracheotomy tube was inserted.

On the following day the breathing had become normal in intensity on both sides, but there were many loud sonorous and moist rales over the whole chest. The temperature was 103.2°, pulse 130, respirations 30. On the second day the temperature was normal; the tracheotomy tube was removed and the wound closed with adhesive-plaster strips. The recovery since then has been uninterrupted.

This case presents several points of interest. Attention is directed to the importance of using a very small amount of chloroform, the anaesthetic having been discontinued as soon as the trachea was opened. The case is one of the youngest thus far recorded. Inferior bronchoscopy was performed in preference to the direct method for the reason that it is impossible to introduce a broncho-

scope into the larynx sufficiently large to permit the necessary manipulations, in so young an infant, without injuring the larynx. In some of the cases of direct bronchoscopy that have been reported, secondary tracheotomy became necessary. (Nehrkorm, Deutsche Medicinische Wochenschrift, Sept. 29, 1904.) It is the first recorded case of successful removal of a foreign body by means of the bronchoscope in this city.

73 E. 92d street.

DISCUSSION.

DR. EMIL MAYER said that this case was the result of a most interesting chapter of events. He had noticed with much interest the reports of Dr. Ingals of Chicago and Dr. Coolidge of Boston on their successful cases of bronchoscopy, and investigation soon showed that the instrument makers of this city had no instruments for bronchoscopy. Dr. Gleitsmann, however, had the necessary instruments, and with his usual courtesy showed them to the speaker and to Dr. Yankauer. Dr. Yankauer then copied the instruments in a rough sort of way, and they had for all practical purposes some bronchoscopy tubes, a couple of extractors, some applicators, and an electric headlight. Through the courtesy of Dr. F. S. Mandlebaum, pathologist to Mt. Sinai Hospital, bodies were placed at the disposal of the speaker, and during the entire month of December the speaker and the reader of the paper performed bronchoscopy on cadavers of both old and young. It was indeed remarkable that, following so soon upon this preparatory work, a case of foreign body in the bronchus should occur and Dr. Yankauer be sent for. A point of much interest upon which the reader had laid stress was the need of great care in giving the anæsthetic for tracheotomy. In this instance only enough chloroform was used to induce primary narcosis. After the trachea was opened, a long suture was run through the trachea and skin, with the tissues between, on either side. This made firm traction possible, enabled the child to breathe; and the bronchoscope was readily introduced. The foreign body was soon extracted, and the duration of the whole operation from the beginning of the tracheotomy until the removal of the foreign body was 25 minutes.

The speaker further stated that the instruments used were those devised by the reader of the paper, and although they were crude, they illustrated what could be accomplished without a most elaborate armamentarium. He congratulated the reader on the successful issue of this most interesting case.

Equilibrium Between Infection and Immunity as Illustrated in the Tonsillar Crypt.

This paper was read by DR. JONATHAN WRIGHT. He pointed out that the tonsillar crypts were nature's test tubes in which could be studied the conflict of the animal organism with its environment. He claimed there was evidence of an adjustment of the resisting power of the epithelial cells to the poisonous power of the bacteria, whereby the latter was kept from passing the epithelial barrier. A proliferation of the epithelium results. The bacteria producing an endo-toxin, thus cause the production of a bacteriolysin. In quiescent conditions an equilibrium is established between the cell and the germ, by which though the latter remains alive in the crypt it is unable to penetrate the epithelial barrier. This is apparently true for saprophytic as well as pathogenic denizens of the crypt. The bacteria are foreign protoplasm, and thus irrespective of specific poisonous properties they excite the production of a bacteriolysin in the epithelial cells. It is probably the endo-toxin of the pathogenic bacteria which by absorption causes the malaise in non-acute conditions of the throat, rather than the entry of the germs themselves.

DISCUSSION.

DR. SWAIN said he thought that the point to which Dr. Wright wished to call attention was that there does exist this equilibrium, whereby in the tonsillar crypts in general three things happen: inorganic substances go through the barrier with no resistance; the actively pathogenic germs are promptly resisted and repelled; the indifferent germs are held at bay but not necessarily destroyed.

These are three existing conditions which the epithelial cell seems to differentiate, and it is this beautiful equilibrium which, when perfectly maintained, keeps us from bacterial invasion. When the equilibrium is disturbed, the balance is lost, and infection results. The whole problem of immunity stands before us in this contemplation. As Dr. Park has suggested, if we understood the whole problem it would be very easy to explain these points.

By calling attention to this important function of the epithelial covering of the tonsils, Dr. Wright has emphasized a point often neglected or forgotten. Some recent observers also attribute to the tonsils a part in the production of lymphocytes of the blood. So valuable a structure should be protected as far as possible instead of being summarily disposed of by surgical procedure as is so often the case.

DR. WRIGHT (closing) said that his interest lay in the epithelium of the crypt. As Dr. Swain had said, we have there on one side of the line of the epithelium in a plugged crypt millions and myriads of bacteria which lie close up against the epithelium; on the other side there were none at all. We knew that if we put inorganic particles in contact, they would pass through. This had always struck him as very peculiar; why did bacteria stand upon one side of the line and not pass it. In a case of diphtheria or tonsillar abscess the examination of a section would show the bacteria passing through the epithelium with the greatest ease. On one occasion, in a case of tuberculosis of the larynx, he had been able to take off some of the epithelium together with the subjacent tissue, and he could see swarms of tubercle bacilli passing through hypertrophied epithelium. As far as he knew the actual observation of tubercle bacilli passing through healthy epithelium had not been noted.

He had not been able entirely to follow all that had been shown of the complex problem after the germ passed through, but certainly there was some change that occurred in the epithelium under certain conditions which allowed the bacteria to go through while on most occasions it was kept out. Apparently the size of dose had a great deal to do with it. If a sufficient number of germs were lodged in the crypt, it was found that they passed through, if we were to accept the experiments with the *Bacillus prodigiosus* that he had referred to; but he doubted their accuracy. As to the *Actinomyces* which he had studied so carefully last year in the tonsillar crypt, it could be seen that they were having apparently a noxious effect upon the epithelium. It was becoming granulated, so that there we had an instance in which the enemy was doing something to the epithelium. There was evidence enough that the detritus which we got in the plugged crypt did not all come from the epithelium. A large part of it, apparently, consisted of dead bacteria which had succumbed in the conflict. We might suppose that there was enough bacteriolytic which passed through the cells of the epithelium to annihilate specific germs, but that was largely conjectural.

We were impressed by the immunity from infection after operations which necessitated scraping off epithelium in the nose, in taking off spurs, and in excising the tonsils. Constantly in these localities there were germs that were inimical to the system, and taking off the epithelium opened up the lines of infection and certainly gave the bacteria a chance to pass directly into the tissues. Now, in these cases we did get a certain amount of reaction, though not much, because the anti-bodies of the tissues took care of that.

A Fatal Case of Pan Sinusitis; Operation.

DR. HARMON SMITH reported this case with the hope that the discussion elicited might act as valuable guidance in the future consideration of such cases, and that the serious outcome in this instance might occasion proper surgical conservatism regarding pan sinusitis.

M. C. a girl of 21 years of age was referred to Dr. Wright the last of December, with a history of nasal disturbance on both sides for the last four years. Father died of pulmonary tuberculosis, and an aunt of laryngeal tuberculosis. Mother's condition suspicious of pulmonary involvement, as reported by her family physician. Polypi had been removed from both nares to the number of 58, the last being removed 2 years ago. During the last six months considerable discomfort would be felt in the nose and head until efforts at blowing the nose had dislodged a thick bloody mucus, when temporary relief would follow. The girl had been particularly bright and vivacious until six weeks prior to the operation, during which time the mother had noticed a progressive mental dullness and inaptitude for work or enjoyment. She was inclined to remain indoors and take but little interest in amusements. For three weeks prior to operation, the patient had complained of constant pain in the back of the head and at times behind the left eye. On account of the pain, the mother was advised to see Dr. Wright. Upon examination he found the left nasal cavity filled with polypi, polypoid degeneration of the middle and inferior turbinates, and a purulent discharge bathing the surface. There was also purulent discharge in the right nares. Transillumination gave a dark shadow of the left frontal sinus and a lesser shadow of the right, also some shadow of the left antrum. Diagnosis—Sinusitis of the left maxillary, sphenoidal, left ethmoidal, and left frontal sinuses, and immediate operation was advised for their relief. The case was referred to the speaker by Dr. Wright on January 2d, and arrangements were made for operation January 3d. Entrance was made through the antrum of the left side, which was found to be somewhat involved, with a granulating membrane and some very exuberant granulations in some of the angles. The nasal wall of the antrum was then broken down, a number of polypi scraped away, and the polypoid turbinals removed, likewise a large mass of broken down material was removed from the region of the superior turbinate and in front of this toward the hiatus, uncapping the anterior ethmoidal cells. With a probe in the sphenoidal sinus as a guide, the anterior wall was curetted away and the posterior ethmoidal cells

were entered, which were filled with granulation tissue and pus. The frontal sinus of the left side was then entered, incision being made above the eyebrow. The external plate was very thin and the gouge entered on the second gentle stroke. The cavity was large and filled with pus and granulations. There was an opening already established with the sinus of the right side, thus necessitating a similar entrance into that sinus. It was filled with two cysts occupying the entire cavity. Both sinuses were curetted and the drainage to the nose established by an opening admitting the little finger. The anterior ethmoidal region of the left side had been sufficiently cleaned by the former curetting, and it was deemed unnecessary to enter this region again at the naso-frontal suture. A large wick of gauze was drawn from both frontal sinuses into the nose and external incisions closed. Likewise packing was placed in the maxillary sinus. As the infection of the right sinus could be sufficiently accounted for by the opening from the left frontal sinus into the right, it was deemed unnecessary to clean out the right nares as was done in the left. The right sinus clearly demonstrated a secondary infection to the left and was far less involved.

The patient's temperature before operation was 100° F., pulse 104; she had shown sluggish mentality and even in coming to the table for operation had demonstrated an unconcern which seemed unnatural in a girl of her age. The operation was on Tuesday. On Wednesday the dressings were removed and the sinuses irrigated with a normal salt solution. But little detritus came away and only slight evidence of purulent secretion was observed. The patient had been comfortable up to this time and the temperature had not reached to 101°. The saline irrigation was given every 4 hours. On Thursday the patient showed some symptoms of cerebral irritation, was flighty in speech and restless, also complained of stiffness in the neck. The temperature was 101 2-3°, the pulse 120. These conditions continued with a gradual increase in intensity and with temperature to 101 4-5°, pulse 130, until Saturday, when it was decided to open the frontal wound of the left side and irrigate from above. The two wounds had healed by first intention. The wound was opened and the sinus found to be in a healthy state. The saline solution flowed freely through to the nose, showing no obstruction. The detritus amounted to nothing.

On Sunday morning it was noticed that the patient had incoherent speech, and had lost some power of the right arm and of the bladder, necessitating catheterization. The temperature had reached its maximum, 102 3-5°, the pulse 136. Up to this time no symptoms

had occurred to show the location of the pus, and when the consulting neurologist determined the focus, the patient was too far gone to stand the operation. There were no sweats or temperature denoting general sepsis until just prior to death when the temperature was reached 99° F, and pulse 98. The patient had no convulsions, and passed away quietly Wednesday morning, eight days after the operation.

One of the interesting features of this case would be to determine if there was not a primary meningitis of low form, as was manifested by the pain in the back of the head, slow mentality, and general malaise, which was rendered more active by the anaesthetic and lowered bodily resistance of the operative procedures. The paths of infection could not be determined owing to the inability to obtain an autopsy; but one would conjecture that the cribiform plate would offer the most direct method of extension, and erosions of the inner plate of the frontal sinus would of course result in meningeal infection. The drainage was so free that I can hardly believe that the infection was the result of any retained pus. The bad results in this case and in others reported with similar outcome would tend to make the prognosis in such cases bad.

DISCUSSION.

DR. LINN EMERSON said that he would like to report a case which while not yet fatal would no doubt prove so in a very short time, due to an unusual complication in a case of this sort. The patient was a bleeder as developed later, and had come under his observation about a year ago, suffering from extensive proptosis of the left eye which was pushed almost out of its socket. Examination showed that the maxillary antrum was not involved. The patient was advised to have some nasal polypi treated, and declined. About a month ago she again came under observation and was sent to the Orange Memorial Hospital for treatment. Her husband reported that she had become inattentive and had deteriorated very much mentally. The first thing the speaker attempted was the removal of the polypi in the nose with snare, but with little success, as she had a considerable haemorrhage and was not at all tractable. She objected to any external cutting operation of any sort. Finally, however, under chloroform anaesthesia he resected the middle turbinate and with the crushing forceps took out about 2 ounces of polypi, clot, and other material of that sort. She bled at this time very freely but not enough to make one think she was a bleeder. At the end of a few weeks she was in very good condition, though

the tumor at the inner corner of the orbit had not shrunken to any great extent. She was told that the only thing to do was to have an extensive frontal and ethmoidal sinus operation. Careful inquiry was made regarding the history of bleeding in her family as well as regarding herself, but nothing was elicited, and about a week ago Dr Emerson had started to do the operation. A skin incision was made through the bridge of the nose and through the brow, but before proceeding further he had been obliged to stop the operation and devote himself to stopping the haemorrhage, which occupied nearly an hour. The patient became very much exsanguinated, and was, at time of this report, in such a poor condition that it was doubtful whether anything could be done for her. There was little doubt that there was some sinus complication, which would probably become progressive.

The speaker thought that we should be very explicit in questioning patients about bleeding. Although he had been very careful in regard to this matter, the patient denied all history of the kind in her family; yet, just before she was sent home, she suddenly recalled that she had had a brother who had suffered a great deal from nosebleed. The Doctor attributed his success in stopping the haemorrhage in the first instance to the fact that he had worked very rapidly and introduced gauze packing saturated with adrenalin at once. In spite of this she lost considerable blood, but not enough to make him think that she was a bleeder.

(Patient has died of cerebral meningitis since this report was read.)

DR. WRIGHT said that he would like to complete the record of Dr. Smith's case. He had examined what this woman had blown out of her nose a week before the operation and evidently the infection within the nose was a very severe one, for the material was necrotic granulation tissue. At his first interview, he had not observed the mental disturbance; but on the second interview, when he turned her over to Dr. Smith, he thought she did seem dull. It was very important to look out for that. He had had another case which resulted in the same way, and had already reported it to the Section. That patient had died in a week or ten days of general purulent meningitis. It was thought the result was due to an operative mistake made in going through into the anterior cerebral fossa. The frontal sinus was absent on that side; but when the case came to autopsy, it was found that there were three old abscesses in the cortex of the brain. In these old cases, the trouble of this girl had lasted 5 years, he thought that the patient or

friends should be warned of the possibility of a fatal issue. It was never possible to tell how far the trouble had gone, or whether there was not some latent meningeal or cerebral trouble which the operation would start into activity. In this particular case, he had not anticipated a fatal termination; but patients should be warned, even though it is not expected. We should be very guarded in our prognosis and advice as to operation.

As to the advisability of operation in any given case, of course if the meningeal process has started, the operation would do no harm, for the patient would die anyway. How often a purulent meningitis was set up as the result of the operation was a question, and another question was how often cases got well without any operation at all. In looking back over the years in which he had treated noses without any sinus operation, he could recall no fatal cases; but he had seen several following operations. The case was not analogous to the problem of general peritonitis following appendicitis. Purulent meningitis coming from a nasal process is proven by post-mortem observation to be very rare and cerebral abscess coming from a nasal focus is rare. Nearly all such cases come from a focus in the ear. He thought the question when to operate had not been discussed in a dispassionate way as yet. We have been too anxious to see how much of the skull could be cut out, and how much of the tissues could be removed in an operative way. Of course we must wait until we have evolved all the ways possible of entering the sinuses; but when this stage was passed (and he hoped it was nearly over now), we should be more cautious in deciding the question of operation. A very large proportion of the cases now operated on are victims to the desire of the surgeon to triumph over technical difficulties. A saner and a safer spirit should be developed.

DR BEAMAN DOUGLASS said that he must take issue with Dr. Wright on some points. He thought that many of the abscesses of the anterior cranial fossa were the result of sinus lesion. Furthermore, he did not see why, in sinus cases suffering from chronic headache, there was not usually established a low grade of pachymeningitis. It was quite possible for this pachymeningitis to extend slowly, or at any time for the cerebral lesion to become infected through the nasal route. In fact, it seemed to him possible that in every case of chronic sinus lesion, but particularly in sphenoiditis and ethmoiditis, there might be some grade of pachymeningitis present; for we could not claim that with the free lymphatic and vascular anastomoses which exist between the nose and the brain

this part would escape involvement from a simple extension of the inflammation. It was certainly a fact that in sinus lesion the disease spread to other sinuses and downward into the nose. It was, therefore, rational to believe that extension could take place in other directions, namely, toward the cerebral cavity, and to suspect that in every chronic sinus lesion there might be some involvement of the covering of the brain. Such a pachymeningitis might not extend very rapidly until some intra-nasal operation, and a slight sepsis or a lighting up of the old inflammatory product might produce a fatal form of brain complication.

He had seen three or four fatal cases, one in his own work, the others in consultation. One of them, a frontal sinus case, had been sent to him for treatment with the request that he open the sinus intra-nasally. This he did. There was no question of having reached the frontal sinus, for it had been irrigated many times; but something happened at the operation which had never been determined, as autopsy was refused. He was confident that the brain plate had not been perforated. The patient suffered a great deal of pain, so that morphine was necessary. She was taken home where she developed a fever, headache, coma, and died in the course of three weeks, of a diffuse pachymeningitis. In this patient the brain may have been perforated or an old pachymeningitis newly lighted up. Such instances as these should make us pause in our work. We are certainly very enthusiastic at the present time in sinus work, and it may be that sometimes sinuses are opened too radically. We know that patients often get well without such extensive operations as we see in hospital practice.

DR. FREUDENTHAL said that he knew a man who opened every frontal sinus he came across. He himself had not opened very many, but he was convinced that it was frequently necessary, and agreed with Dr. Douglass in thinking that infection of the brain takes place from the frontal sinus oftener than we believe. He then related a case of a man who had tried to commit suicide, and had finally come under his care. The sinus was opened and the whole bone was found to be broken down. There was no doubt but that later on infection would have taken place, and that operation was absolutely necessary. He thought that insanity might and often did occur as the result of such cases. In another case, he had removed polypi from the nose of a patient who had undoubtedly sinusitis, but who would not submit to a sinus operation. A short time later he committed suicide. He had been dull, could not attend to his business, or take his food for several weeks, etc. Such cases

as these made it clear that meningeal infection took place in a number of cases of sinus involvement.

A Bronchoscope.

DR. EMIL MAYER said that he was sorry to state that an accident to Dr. Gleitsmann prevented him from keeping his promise to present his instrument. In loyalty to the Section, however, he had sent the entire apparatus and had asked the speaker to take his place.

The apparatus as presented consisted, first of a phantom, next of a Kierstein electric light which was attached to the rheostat through the ordinary incandescent light. The special instruments were next shown: First, large sized tubes riveted to a handle, but quite short and intended only to facilitate introduction of the bronchoscope. Second, bronchoscopic tubes of various sizes, from the small-size, applicable to children, to the largest size for adults. Next, were shown the universal handle which was attached to the extractors, and cotton applicators, also the hollow tubes attached to the bottle for aspirating the liquids found in the bronchus.

The demonstration was made on the phantom. With the bronchoscope introduced in the same direction as though it were a patient lying on the back with the head well extended. With the Kierstein light placed directly over the eye, the light was thrown in and the extreme end of the tube readily seen and demonstrated.

(The members of the Section examined the bronchoscope as demonstrated by Dr. Mayer.)

Incision of the Drum Membrane as a Means of Improving the Hearing in Dry Middle Ear Catarrh—TH. K. STEFANOWSKI—*Arch. f. Ohrenh.*, Leipzig, Aug. 26, 1904.

The author removes the anterior half of the drum membrane as a preliminary step and in stubborn cases the posterior half including the handle of the maleolus as far as the insertion of the tensor tendon. From fifteen cases he concludes the operation is a simple and safe procedure which improves the hearing in 62.5% of the cases and the tinnitus and vertigo in all the cases. The results can be enhanced by the use of an artificial ear-drum. Some of his cases were under observation for two years, but he is not prepared to state that the results will be permanent.

YANKAUER.

**AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND
OTOLOGICAL SOCIETY.**

*Tenth Annual Meeting, Held in Chicago, Ill., May 30, 31, and June
1, 1904.*

NORVAL H. PIERCE, M.D., President.

(Continued from March No., page 254.)

The Sphenoidal Sinus and Its Surgical Relationship.—By DR.
H. HOLBROOK CURTIS, New York. (*Published in full in THE
LARYNGOSCOPE, Vol. XIV., No. 11, page 856.*)

This was an interesting anatomical description of the sphenoidal sinus and its anomalies, its pathological conditions, his procedure of operating and subsequent treatment.

DISCUSSION.

Dr. A. LOGAN TURNER said that the subject of sphenoidal sinus disease was more or less in its infancy. Perhaps this was putting it rather too strongly, but we were still groping somewhat in the dark as to the best methods of attacking it. He thought the more recent work, as exemplified in the paper of Dr. Berens, showed that we were getting more into the general line of treatment. He had been impressed with the German literature on sphenoidal sinus suppuration, and by the apparently enormous number of cases which German physicians had under observation. One was not able to diagnose this condition in all cases. Certainly, one's experience was such as to make him believe that sphenoidal sinus suppuration was very common.

He would like to hear from Dr. Curtis and others as to what the percentage was of sphenoidal sinus disease they met with in their clinical practice. The time was coming, if it was not already here, when we should look for a collective investigation of all sinus work. He had sometimes thought of taking the matter up himself, taking the time and opportunity to get from all the rhinologists of the world an expression of opinion as to the number of cases seen by them, the chronicity of the cases, the method of operating, the results, the fatalities, relapses, the successful cases, the non-successful cases; then we would have valuable data and know where we were and would get some idea as to the best methods of dealing with cases of accessory sinus invasion.

Dr. ROBERT C. MYLES thought Dr. Curtis' plan of procedure was the one that had been usually adopted by operators. In regard to the number of cases, very frequently there was simply a discharge of

muco-pus, but the cases where the periosteum had been denuded, where there was a carious or necrotic area, or where there was some process going on invading the bone which in the future would invade the brain, were relatively rarer than the other class. In that class of cases we had evidence of destructive change, perhaps necrosis or other changes in the bone, and it was imperative to operate upon them. In removing the middle turbinate and posterior end, he had taken away as much of the anterior wall as he could. The curettage had been cautiously performed. He had gone into the sphenoid sinus with delicate curettes and found the wall practically gone. He had had cases with meningeal symptoms. He never curetted extensively, and the patients had all gotten well when it seemed to him that it would be impossible for them to get well. The outcome had been a surprise to him in many cases. He could show cases of several years' standing, with a large opening in the sphenoid, that were practically normal except for this large opening. The phenomena of pain and other distress were characteristic; and the secret of success was due to the large opening. These openings should be made permanent by excision of the membranes that formed over them again from time to time. It was a simple thing to excise them.

Dr. CURTIS, in closing the discussion, said he did not intend to discuss the various operations that had been described from time to time for cases of empyema of the sphenoidal sinus.

In regard to Dr. Turner's question as to statistics showing the percentage of sphenoidal sinus cases, when in Berlin two years ago he investigated the statistics given in the larger hospitals there, and found that the percentage of sinus cases in proportion to the attendance at the Berlin clinics was 50 per cent greater than the percentage we had in the largest clinics in New York. If one saw the number of patients with bandaged heads walking the wards of the hospitals there he would realize this. Sinusitis being contagious, its frequency was accounted for very largely by the absence of fresh air in the crowded portion of the city, sleeping with windows closed, and insufficient nourishment.

The operation he described in his paper was, as far as he knew, the first one of its kind performed, and it was rather interesting to look back upon it now.

Dr. Berens reported fourteen cases yesterday in which he made the operation advocated by Mouret and Jansen, a procedure which was only to be undertaken when there was disease already existing in the maxillary antrum, and in the ethmoid cells. It would be an injudicious operation to undertake if the antrum was not diseased

and the ethmoid cells not already invaded. In such cases a simple opening of the anterior wall of the sphenoid would be all that was necessary.

In opening the sinus from the region of the maxillary antrum, taking the route between the ostium maxillare and palatal bone, one would be apt to infect cells not already diseased. He had not gone into that question at all, preferring to leave the subject of operation for another occasion.

The Treatment of Tinnitus Aurium.—By DR. W. S. BRYANT,
New York City. (*Published in full in THE LARYNGOSCOPE,*
Vol. XIV., No. 7, page 531.)

DISCUSSION.

Dr. WILLIAM C. BANE said he presumed the author of the paper left out quite a good deal in reading it, as in speaking of the use of the galvanic current he did not mention the strength of current. The speaker thought this was important.

Dr. C. R. HOLMES said the subject was one of great importance. He was sorry the author was obliged to skip so much of his paper on account of the limitation of time. He should certainly look forward to reading the paper carefully when it was published.

Dr. ARTHUR B. DUEL said if he understood the essayist correctly, he stated that in cases in which tinnitus persisted, in spite of efforts to relieve it, he would advise operation for complete deafness. As a matter of fact, nearly all cases which were encountered that had chronic catarrhal deafness had marked tinnitus, which was never completely relieved. He would like to ask the author if it was his intention in all these cases to render the patient deaf in relieving the tinnitus, or in such cases in which the tinnitus was pronounced, did he expect the patients to become insane.

Dr. BRYANT, in closing the discussion, said in regard to the remarks concerning the use of electricity, he used the galvanic current, and where one uses the larger electrode in the pharyngeal end of the tube, he could employ as much current as the patient would stand without any bad results.

In answer to Dr. Duel's question, he would like to say that in some cases in which the tinnitus was very severe he would not hesitate to recommend the radical removal of the auditory nerve. The idea was that in cases in which the noise was very great, disturbing the patient mentally, and where insanity was threatened, it was worth while to take any risk. In many cases the tinnitus might be only a slight inconvenience.

BOOK REVIEWS.

The Modern Mastoid Operation. By FREDERICK WHITING, A.M., M.D., New York. One vol. 353 pp., illustrated by 25 half tones and 23 key plates. Publisher, P. Blackstone's Son & Co., Philadelphia, 1905. Price, \$6.00.

This exhaustive and excellently illustrated monograph is a classic of its kind. It is the most practical and instructive book ever offered to the medical profession upon this important topic. The book is divided into a Historical and a Technical portion.

Under the first division, a chapter is devoted to each of the following subjects: (1) The development of the operation for drilling the mastoid process; (2) The Schwartz operation; (3) The complete modern mastoid operation, a Flap operation.

This last named operation differs in two important details from the commonly accepted technique of mastoid surgery. The author advocates an additional posterior incision, at right angles to the usual curvilinear one, and the second incision should be made directly backwards toward the occipital protuberance, beginning upon the posterior margin of the primary incision, at a point opposite the center of the external auditory canal. The flaps thus formed obviate the difficulties of working either a contracted field, which formerly caused considerable annoyance and delay.

The second difference, which characterizes the *Complete Mastoid Operation*, is the removal of the pneumatic spaces and diploic cells at the posterior root of the zygoma. These structures are frequently found diseased when indications demand a secondary operation. In the author's experience, accumulations in this region have been responsible for the formation of epidural abscesses of the middle cranial fossa. He believes that many cases, which in the past maintained protracted and unaccountable post-operative temperatures, have no doubt been caused by the absorption of pus remaining in unopened cells at the root of the zygoma. The author advocates the removal of these structures as a routine measure, and offers a record of two hundred and fifty consecutive cases as clinical evidence to substantiate his deductions.

A chapter of sixteen pages describes the pathology of suppurative mastoiditis, in its modern aspect. Various authors are quoted and suppurative disease of osseous tissue is carefully considered. The *method of propagation* is concisely given.

In the remaining chapters, each step of the modern mastoid operation is clearly pictured, and the text is graphically illustrated by twenty-five (25) half-tones and twenty-three (23) key plates made from original drawings. These plates are the best of their kind ever produced. An instructive portion of this volume is the author's remarks on *Faults of Technique*, with which the various chapters are ended.

Dr. Whiting is to be congratulated upon his valuable addition to otological literature and a word of praise must be given to the artist who executed such distinctive illustrations.

The book is handsomely bound and very well printed. Wm. F. Fell Company, of Philadelphia, are the electrotypers and printers. M. D. L.

The American Year-Book of Medicine and Surgery for 1905. A Yearly Digest of Scientific Progress and Authoritative Opinion in all branches of Medicine and Surgery, drawn from journals, monographs, and textbooks of the leading American and foreign authors and investigators. Arranged, with critical editorial comments, by eminent American specialists, under the editorial charge of GEORGE M. GOULD, A.M., M.D. In two volumes. Volume I, including *General Medicine*; Volume II, *General Surgery*. Two octavos of about 700 pages each, fully illustrated. Philadelphia and London: W. B. SAUNDERS & Co., 1905. Per volume: Cloth, \$3.00 net; Half Morocco, \$3.75 net.

The 1905 issue of Saunders American Year-Book of Medicine and Surgery fully maintains the pre-eminent position which it long ago established. Dr. Gould, the editor, has associated with him a staff of men of the greatest ability, shown in the conscientious thoroughness with which each article is prepared. The chapter on Diseases of the Ear, Nose and Throat is edited by Drs. J. Braden Kyle and J. Leslie Davis. In the portion of the Year-Book devoted to General Surgery, the latest ideas on anesthesia will be of interest to the specialist, as well as the surgery of the respiratory organs, of the cranial nerves and plastic surgery. The text, as usual, contains a number of illustrations of practical value; there are also nine insert plates of much excellence.

Alling and Griffin's Diseases of the Eye and Ear. A Manual for Students and Physicians. By ARTHUR N. ALLING, M.D., Clinical Professor of Ophthalmology in Yale University, Department of Medicine, New Haven, Connecticut, and OVIDUS ARTHUR GRIFFIN, B.S., M.D., Late Demonstrator of Ophthalmology and Otology, University of Michigan, and Oculist and Aurist, University Hospital, Ann Arbor, Michigan. In one 12mo volume of 263 pages, with 83 illustrations. Cloth, \$1.00, net. Lea Brothers & Co., Publishers, Philadelphia and New York, 1905.

This little book, the seventeenth, in Lea's Series of Medical Epitomes, edited by VICTOR C. PEDERSEN, M.D., will take its place among the rest as a clear, thorough, interesting and concise presentation of the subjects of which it treats. It does not aim to be a treatise, nor is it a mere compend, but an up-to-date manual, which will prove invaluable to students and to those whose aim does not direct them to more voluminous works. The hundred pages devoted to the ear give a summary of its anatomy and physiology, of the method of examination, and of the diseases of the three parts, external, middle and internal ear. Numerous cuts serve to elucidate the text.

The Doctor's Recreation Series. Volume I. THE DOCTOR'S LEISURE HOUR facts and fancies of interest to the doctor and his patients. CHARLES WELLS MOULTON, General Editor. Arranged by Porter Davies, M.D. Octavo, 352 pp. Illustrated, and

Volume II, THE DOCTOR'S RED LAMP, a book of short stories concerning the doctor's daily life. Selected by CHARLES WELLS MOULTON. Octavo, 343 pp. Illustrated. Publisher: The Saalfield Pub. Co., Chicago, Akron, O., New York.

These two handsome volumes, commanding themselves at first sight, prove just as satisfactory in matter as in appearance. The names of the editors are a sufficient guarantee in themselves. We find here a compilation from the best of English authors of selections suitable to beguile a minute or to occupy a leisure hour. The selections are, some of them, old favorites, many new discoveries, with which to enrich one's store of anecdote.

